Boston University College of Engineering
Department of Biomedical Engineering

32nd Annual Senior Design Project Conference

Friday May 5
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   - Drug Delivery
   - Disease Models I

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81. Session V Abstracts:
   - Tissue Engineering
   - Drug Delivery
   - Disease Models II

89. Student Resumes
Welcome from the Chair

It is my great pleasure to welcome our guests, our alumni, industry representatives, our faculty and our students to Boston University’s 32nd Annual Biomedical Engineering Senior Design Project Conference. This conference has become an annual rite of passage for all BU BME seniors, and culminates our year-long Senior Design Project Program. This program is recognized as a national model for the capstone independent design and communication experience for BME undergraduates, and helps us train the future leaders and innovators in biomedical engineering. Over the course of the day, our talented students will present their state-of-the-art design projects as they complete their BS degrees from one of the top Biomedical Engineering programs.

Biomedical Engineering synthesizes engineering, computation, math and physical sciences with the life sciences to advance our understanding of biology, physiology and the medical sciences. This understanding is then exploited to develop new devices and methods to improve medical care. Our ABET-accredited BS degree program in Biomedical Engineering is one of the oldest such programs in the country, and is designed to provide integrated training in life, physical, and engineering sciences as preparation for a variety of careers in bioengineering, applied biotechnology, and medicine.

Seniors must also engage the medical device design process through the course “Product Design and Innovation in Biomedical Engineering,” coordinated by Professors Gregory Martin and Tom Szabo. The course complements the senior design experience and teaches concepts of medical device design, product development, intellectual property, patents, regulatory issues, and market assessments.

This year’s senior design project program was directed by Professor Catherine Klapperich and Professor Michael Smith. Professors Klapperich and Smith invested much energy and organizational skills to sustain the level of excellence and impact for which this program is renowned. They were assisted by a very talented team of technical advisors from Boston University, BUMC, the Harvard hospitals, and elsewhere. These technical advisors read, graded and commented on written assignments, proposal drafts, oral proposal presentations and progress reports. Their efforts helped ensure that the program continues to sustain its high level of excellence. I served as part of this team and was fortunate to enjoy the program in all of its dimensions. I also want to acknowledge the assistance of Christian Engley and George Vahamikos from the BU Writing Program. Finally, a very special thank you to Megan Wallander for her sustained support of the Senior Design Program throughout the year, and her tireless efforts to coordinate all aspects of today’s conference.

Our students are remarkable at rising to the challenge and I have no doubt that their presentations today will impress, inform and entertain you. Enjoy!

John A. White Ph.D.
Professor and Chair, Department of Biomedical Engineering
## Research Centers

- Biological Design Center
- BioMolecular Engineering Research Center
- BUnano
- Center for Future Technologies in Cancer Care
- Center for Memory and Brain
- Center for Research in Sensory Communication and Neural Technology
- CompNet
- Hearing Research Center

## Research Laboratories

<table>
<thead>
<tr>
<th>Research Laboratory</th>
<th>Laboratory for Engineering Education &amp; Development</th>
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<tbody>
<tr>
<td>Auditory Neuroscience</td>
<td>Laboratory for Engineering Education &amp; Development</td>
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<tr>
<td>Binaural Hearing</td>
<td>Matrix Mechatrontransduction</td>
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<tr>
<td>Biomedical Optics</td>
<td>Multi-Dimensional Signal Processing</td>
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<tr>
<td>Biomicroscopy Lab</td>
<td>Multi-Scale Tissue Biomechanics</td>
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<tr>
<td>Biomimetic Materials Engineering Lab</td>
<td>Natural Sounds and Neural Coding</td>
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<tr>
<td>Biomolecular Systems</td>
<td>Orthopaedic and Developmental Biomechanics</td>
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<tr>
<td>Brain and Vision</td>
<td>Respiratory &amp; Physiological Systems Identification</td>
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<tr>
<td>Cortical and Computational Decoding of Speech</td>
<td>Ritt Lab</td>
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<td>Dennis Lab</td>
<td>Sgro Lab</td>
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<tr>
<td>Genomic Systems Biology Laboratory</td>
<td>Structural Bioinformatics</td>
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<tr>
<td>Han Lab</td>
<td>Synthetic Biology &amp; Immune Cell Engineering</td>
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<tr>
<td>Klapperich Laboratory for Appropriate Healthcare Technologies</td>
<td>Tien Group</td>
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<td>The Dunlop Lab</td>
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<td>White Lab</td>
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</table>
Conference Schedule
Student Teams and Technical Advisors
# Department of Biomedical Engineering
32nd Annual Senior Design Project Conference

— Friday, May 5, 2017 —

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>8:45 AM</td>
<td>Continental Breakfast &amp; Check-in</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Welcome and Opening Remarks: Prof. Michael Smith, PHO 206</td>
</tr>
</tbody>
</table>

### 9:45AM-10:30AM: SESSION I

PHO 206
DIAGNOSTICS I
Session Chair: Prof. Catherine Klapperich

- Rapid Detection of Zika Virus for Point-of-Care Diagnostics During Pandemics
  Connor Beck, Jordan Haburcak, Jenna Schroeder

- A Low-Cost Diagnostic Test for Cervical Cancer Screening
  Allison Ramsey, Tania To

- Simple Visual Pathogen Detection on Paper Strips
  Carmen Li, Lisa Nguyen

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>10:30 AM</td>
<td>BREAK</td>
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<tr>
<td>10:45 AM</td>
<td>CONTINUED</td>
</tr>
</tbody>
</table>
**10:45AM-12:00PM: SESSIONS IIa & IIb**

**PHO 206**  
**DIAGNOSTICS II**  
Session Chair: Prof. Joyce Wong

**Ear Biometric Scanner for Improved Patient Identification in Zambia**  
Rachael Campion, Lauren Etter (ME), David Martinez (ME)

**Flexible Electrodes for Portable Microfluidic Diagnostics**  
Kyle Cheng, Matthew Kim

**Biosensor to Measure Oxidative Stress in Marine Coral Populations**  
Peter Cho, Rahul Daftari, Rishi Jain

**Identifying Pathogens Using Real-Time PCR and Pseudo-Complementary Primers with Label-Free Multiplex Capabilities**  
Jennifer Asaro, Arjun Patel, Nicholas Serdaru

**Saving Lives through Telemedicine: The Pneumonia Diagnosing App**  
Anna Hughes, Kenny Song

**PHO 203**  
**BIOMECHANICS**  
Session Chair: Prof. Dimitrije Stamenovic

**pMPC: A Synthetic Crosslinked Polymer Biolubricant**  
Kamila Drezek, Archana Jeyaram, Walī A. Sabuhi

**A Comparative Biomechanical Study of the Surgical Reconstruction of the Scapholunate Ligament**  
Beatrice Baumberger Altitrib, Isaac Dashelsky, Riley Morien

**Assessment of Tendon Tear Progression In-Vivo**  
Ved Patel, Daniel Ripley, Vanessa Zoghbi-Harb

**Method to Obtain Facet Joint Displacement in Healthy and Degenerated Spines**  
Cameron Curtiss, Caeleigh Higgins, Lindsay Hulley

**Lesion-Specific QCT to Improve Prediction of Pathologic Vertebrae Fracture Load**  
Bryan Chiakpo, Mohit Dangeti, John Ziamandanis

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**12:00PM-12:15PM: COFFEE BREAK**
### 12:15PM-1:30PM: SESSIONS IIIa & IIIb

<table>
<thead>
<tr>
<th>PHO 206</th>
<th>HEALTH MONITORING</th>
<th>Session Chair: Prof. Michael Smith</th>
<th>PHO 203</th>
<th>TISSUE ENGINEERING/DRUG DELIVERY/ DISEASE MODELS I</th>
<th>Session Chair: Prof. Allyson Sgro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal Vitals Monitoring Pad</td>
<td>Josef Atmaz Al-Sibaie, Teja Karri, Eric Loreaux</td>
<td>3D Bioprinting for Tumor Engineering</td>
<td>Kevin Huang</td>
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<tr>
<td>Project BraveHeart: Sleep Tracking for Patients with Congestive Heart Failure</td>
<td>Moustafa Amin, Michael Hanna, Dimitrios Psaltos, Dewey Robinson IV</td>
<td>Does the Inter-Epithelial Transfer of Exosomal NOS and P-gp Promote Inflammation in Sinonasal Cells?</td>
<td>Ander Gomez, Conor Sullivan</td>
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<tr>
<td>Micro Battery-Free Wireless Sensor for In-hospital Neonatal Monitoring</td>
<td>Chen Dong, Andrew Russo, Zhengyang Zhang, Zhiqian Zhou</td>
<td>Nanoparticles for Oligonucleotide and Curcumin Delivery to Breast Cancer Cells</td>
<td>Erin Chang, Alexander Czaja</td>
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<tr>
<td>Design of an iPhone-Based Nitric Oxide (NO) Meter</td>
<td>Ashley Hartman, Chase Richard, Michelle Rose</td>
<td>Engineered Adipose Tissue That Can Grow</td>
<td>Margaret Ann Bolick, Samantha Chua, Melissa Garcia, Tyler Ryan</td>
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</tbody>
</table>

### 1:30PM-2:15PM: LUNCH
### PHO 206
**IMAGING & TRACKING**
Session Chair: Prof. Irving Bigio

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Photon Imaging: Simplifying time and labour-intensive post-experimental data processing</td>
<td>Eric Tam, Sherry Yan, William Yen</td>
</tr>
<tr>
<td>Optical tracking of anesthetized Caenorhabditis elegans</td>
<td>Danielle Dougherty, Padric Garden</td>
</tr>
<tr>
<td>Real Time Muscle Movement Quantification by Ultrasound for Individuals After Stroke</td>
<td>Monika Lee, Jennifer Rock, Paul Sliwinski</td>
</tr>
<tr>
<td>Wireless Optical Recording of Neural Activity in Behaving Mice</td>
<td>Jessica Lin, Paul Yao</td>
</tr>
<tr>
<td>Simultaneous localization and mapping using biologically inspired interactions of visual feature angle and spatial location</td>
<td>Micheal Gutman, Clark Ikezu, Avninder Singh</td>
</tr>
<tr>
<td>Modelling and Measuring Particle Deposition in Asymmetric Airways Using 3D Printing</td>
<td>Edward Taylor, Daniel Wiley</td>
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</tbody>
</table>

### PHO 203
**DEVICES**
Session Chair: Prof. Mary Dunlop

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>Comparison and Implementation of Trapezoidal and FOC Commutation Methods</td>
<td>Eugene Kwan, Evan Reynolds</td>
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<tr>
<td>Exploration of Lubricity in Transcatheter Delivery Systems</td>
<td>Undina Gisladottir, Wayne Huynh, Megan Priem</td>
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<tr>
<td>PID Control of Treadmill Speed Using Human Kinematics</td>
<td>Jacob Ferriero, Matti Groll, Elizabeth Kenny, Brian Weden</td>
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<tr>
<td>Optimizing Epinephrine Auto Injector Storage Strategies</td>
<td>Mohammad Alaghband, Brandon DeLeva, John Kleitz, Patricia Pikura</td>
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<tr>
<td>Design of an Electromyographic Switch for Communication System Access</td>
<td>Victoria Frick, Katherine Girouard, Evi Shiakolas (ME)</td>
</tr>
<tr>
<td>HeartinSole: A Remote Monitoring Device for Congestive Heart Failure Patients</td>
<td>Susanna Chen, Austin Lent, Brianna Rodgers</td>
</tr>
</tbody>
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### 3:45PM-4:00 PM: COFFEE BREAK
Development of a Novel Progressive Supranuclear Palsy Mouse Model
Aaron Bockmiller, Mina Botros

Examining Muscle-Bone Crosstalk: Design of Muscle Trauma Model for Study of Stem Cell Recruitment in Injury Repair
Jaclyn Grode, Kathryn Hardin, Blake Oberfeld

Design and Implementation of an Automated Bioreactor System to Investigate the Development of Hyperreactivity in Airways
Daniel Brewster, Suzanne Stasiak

Engineering Nanoparticles for Cancer Immunotherapy Application
Melissa Kallander, Kayla Myers, Ashika Patel

Understanding Design Principles of CRISPR Based Activation of Gene Transcription in Mammalian Cells
Yash Agarwal, Nikita Patil, Kathleen Ryan

5:15PM-Closing Remarks
Prof. Catherine Klapperich, PHO 206
# 2017 Senior Design Project Technical Advisors

<table>
<thead>
<tr>
<th>Student Team</th>
<th>Technical Advisor(s)</th>
</tr>
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<tbody>
<tr>
<td>Connor Beck, Jordan Haburcak, Jenna Schroeder</td>
<td>Alexis Sauer-Budge, Christine McBeth, Holger Wirz</td>
</tr>
<tr>
<td>Allison Ramsey, Tania To</td>
<td>Catherine Klapperich, Mario Cabodi, Winnie Wong</td>
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<tr>
<td>Carmen Li, Lisa Nguyen</td>
<td>Irina Smolina</td>
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<tr>
<td>Rachael Campion, Lauren Etter, David Martinez</td>
<td>Christopher Gill, William Hauser</td>
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<td>Kyle Cheng, Matthew Kim</td>
<td>Mario Cabodi</td>
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<td>Peter Cho, Rahul Daftari, Rashi Jain</td>
<td>James Galagan</td>
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<td>Jennifer Asaro, Arjun Patel, Nicholas Serdaru</td>
<td>Irina Smolina</td>
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<td>Anna Hughes, Kenny Song</td>
<td>Andrey Vyshekskiy, Iosif Gershteyn</td>
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<tr>
<td>Kamala Drezek, Archna Jeyaram, Wali A. Sabuhi</td>
<td>Janne T.A. Makela, Benjamin G. Cooper, Brian D. Snyder, Mark W. Grinstaff</td>
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<tr>
<td>Beatrice Baumberger Altrirriha, Isaac Dashefsky, Riley Morien</td>
<td>Aja Nazarian</td>
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<td>Ved Patel, Daniel Ripley, Vanessa Zoghbi Harb</td>
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<td>Cameron Curtiss, Caeleigh Higgins, Lindsey Huiley</td>
<td>Elise Morgan</td>
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<td>Bryan Chiakpo, Mohit Dangerti, John Ziamandaris</td>
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<td>Alan Fuji, Jonathan Rosen</td>
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<td>Ashley Hartman, Chase Richard, Michelle Rose</td>
<td>Dina Ralt, Herbert Voigt</td>
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<td>Noura Al Zayed, Christian A. Montero, Ziqi Zhang</td>
<td>Herbert Voigt</td>
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<td>Kevin Huang</td>
<td>Wonhye Lee</td>
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<td>Ander Gomez, Conor Sullivan</td>
<td>Xue Han, Angela Nocera</td>
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<td>Erin Chang, Alexander Ceja</td>
<td>Tyrone Porter</td>
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<td>Margaret Ann Bolick, Samantha Chua, Melissa Garcia, Tyler Ryan</td>
<td>Joe Tien</td>
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<td>Shahd Bawarth, Lidia De Barros, Shaheer Piracha, Sruti Raja, Fiza Shaukat</td>
<td>Christopher Wilson</td>
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<td>Eric Tam, Sherry Yan, William Yen</td>
<td>Alberto Cruz-Martin</td>
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<td>Danielle Dougherty, Padrick Garden</td>
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<td>Monika Lee, Jennifer Rock, Paul Sliwinski</td>
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<td>Caroline Mayo</td>
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<td>Cara Lewis, Andre Sharon</td>
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<td>Jerome Mertz, Thomas Bifano</td>
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<td>Cara Stepp, Meredith Cler, William Hauser, Susan Fager</td>
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<td>Susanna Chen, Austin Lent, Brianna Rodgers</td>
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<td>Tsuneya Ikezu</td>
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<td>Daniel Brewster, Suzanne Strasiak</td>
<td>Kenneth Lutchen</td>
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<td>Yash Agarwal, Nikita Patil, Kathleen Ryan</td>
<td>Wilson Wong</td>
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Participating Companies
2009-2017
3M
Accenture Life Sciences
Advanced Instruments, Inc.
AltraBio
Altran
Applied Medical Resources
ArQule, Inc.
Atrium Medical
Avedro, Inc.
BD Medical
BD Advanced Diabetes Care
Beth Israel Deaconess Medical Center
BioTrove, Inc.
Biotronik
Bioventus LLC
Boston Engineering
Boston Medical Center, Dept. of Anesthesiology
Boston Medical Center, Dept. of Clinical Engineering
Boston Scientific
Boston Medical Center, Dept. of Orthopedic Surgery
Boston University, Dept. of Athletic Training and Physical Therapy
Boston University, Dept. of Biology
Boston University, Dept. of Biology (Neuroscience)
Boston University, Dept. of Mechanical Engineering
Boston University, Dept. of Physiology and Biophysics
Boston University, Dept. of Physiological and Brain Sciences
Boston University, Dept. of Speech, Language and Hearing Sciences
Boston University School of Management
Boston University School of Medicine
Boston University School of Public Health
Brandeis University
Brigham and Women’s Hospital
Broad Institute
Bruker Daltonics
CAE Healthcare
CBS Local
Center for Global Health and Development
Charles Stark Draper Laboratory
Children’s Hospital Boston
CIMIT
CKD Associates
Clark & Elbing LLP
Cleveland Clinic
Codman Neuro, Johnson & Johnson
Colorado Nepal Alliance, Dept. of Veterans Affairs
Columbia University, College of Physicians and Surgeons
Comprehensive Health Management Inc.
ConforMIS, Inc.
Consult and Design
Covidien
CSA Medical
Cynosure
Davol
Davol - C.R. Bard, Inc.
Decision Resources
DEKA Research and Development Corporation
DePuy Spine, Inc.
DocBox, Inc.
Draeger Medical Systems, Inc.
Eastman Kodak Company
Eaton-Peabody Laboratory
Elm Electrical & Automation
EndoCore
Enumeral Biomedical Holdings, Inc.
Essex Orthopedics & Optima Sports Medicine
Fellers Snider et al.
Ferrotec Corporation
Foundation Medicine
Fraunhofer USA-CMI
GE Healthcare
Gems Sensors
Genzyme Corporation
GlobalData Healthcare
Grant Street Group
Goodyear-Veyance Technologies, Inc.
Harvard Business School
Harvard Medical School
Harvard University
Harvard-MIT Division of Health Sciences and Technology
HeartWare, Inc.
Hologic
Hypertherm
Iandiorio Teska & Coleman
IDEXX Laboratories
Image Stream Medical
Instrumentation Labs, Inc.
Integra LifeSciences
Ironwood Pharmaceuticals
iWorx Systems, Inc.
Jana Care Inc.
JH Technologies
Johnson & Johnson
Lux Research
Massachusetts Eye and Ear Infirmary
Massachusetts General Hospital
Massachusetts Institute of Technology
Medtronic, Inc.
METI
Minnesota State University
Mankato National Instruments
Motility Biomedical, Inc.
nanoView Diagnostics , Inc.
Navinet
Neuroptix Corporation
New Health Sciences
Novartis Institutes for BioMedical Research
NuOrtho Surgical, Inc.
Optasia Medical, Inc.
O’Shea Getz PC
Olympus Surgical Technologies America
Oregon Health & Science University
Parexel
Perceptive Informatics
PerkinElmer
Pfizer Biotherapeutics
Philips Healthcare
Philips Ultrasound
Praxis Advisors LLC
Pulmatrix, Inc.
Raytheon
Regeneron Pharmaceuticals
Respiratory Motion, Inc.
Sanofi
Sapient
Schepens Eye Research Institute
Schneider Electric
Solace Therapeutics, Inc.
SoundMedicine
St. Jude Medical
Teleflex Medical
Ten15 Ventures
Toxikon Corporation
Tufts University
UMASS
Universidad de Valencia
University of Texas at Austin
University of Wisconsin-Madison
US Army Institute of Environmental Medicine
USA Research Institute of Environmental Medicine
VA Boston Healthcare System
Vantage Management Group
Verbal Care
Vertex Pharmaceuticals
Veterans Administration
Visus Technologies
Worcester Polytechnic Institute
Wyss Institute for Biologically Inspired Engineering
Xcellerex
BME Faculty
Primary Faculty

TIMOTHY BARBARI
Professor, Biomedical Engineering; Associate Provost for Graduate Affairs
PhD, Chemical Engineering, University of Texas at Austin
Biomaterials, hydrogels, membranes, biomolecular transport and binding, biosensors.

IRVING J. BIGIO
Professor, Biomedical Engineering; Electrical and Computer Engineering; Physics
PhD, Physics, University of Michigan
Medical applications of optics, lasers and spectroscopy; biomedical optics and biophotonics; biomolecular dynamics; applied spectroscopy, especially to biomedical problems; nonlinear optics; quantum electronics and laser physics.

DAVID BOAS
Professor, Biomedical Engineering
PhD, Physics University of Pennsylvania
Neurophotonics, Biomedical Optics, Oxygen delivery and consumption, Neuro-vascular coupling, Physiological Modeling.

CHRISTOPHER S. CHEN
Professor, Biomedical Engineering
MD, Harvard University; PhD, Medical Engineering, MIT
My laboratory seeks to understand how cells interact with their environment, and to use this knowledge to control cell function. In particular, we are studying the cooperation between adhesive, mechanical and biochemical signaling in the regulation of angiogenesis and stem cell biology.

H. STEVEN COLBURN
Professor, Biomedical Engineering; Director, Hearing Research Center
PhD, Electrical Engineering, MIT
Measurement and modeling of binaural hearing performance; Modeling the activity of auditory brainstem neurons and measurement and modeling of spatial attributes of sound perception.

EDWARD DAMIANO
Professor, Biomedical Engineering
PhD, Applied Mechanics, RPI
Integrated cellular and extracellular biomechanics; biofluid dynamics; microelectromechanical systems; vestibular biomechanics; non-Newtonian rheology; closed-loop blood-glucose regulation.

CHARLES DELISI
Metcalf Professor of Science and Engineering; Dean Emeritus, College of Engineering
PhD, Physics, New York University
Developing and applying computational/mathematical methods, and high throughput experimental methods for inferring the structure and function of protein networks.

MICAH DEMBO
Professor, Biomedical Engineering
PhD, Biophysics, Cornell University
Statistical mechanics in biological systems; cell information processing and signal transduction; thermodynamics and mechanics of cell adhesion; biophysics of cell deformation, active motility.

ALLISON M. DENNIS
Assistant Professor, Biomedical Engineering
PhD, Biomechanics, Georgia Institute of Technology
Nanobiotechnology; fluorescent biosensing; fluorescence resonance energy transfer (FRET); quantum dot chemistry; fluorescence microscopy; single molecule sensing/imaging.

MARY DUNLOP
Assistant Professor, Biomedical Engineering
PhD, California Institute of Technology
Synthetic biology, systems biology, control theory, gene regulatory networks.

SOLOMON EISENBERG
Professor, Biomedical Engineering; Professor, Electrical and Computer Engineering; Senior Associate Dean for Academic Programs, College of Engineering
ScD, Electrical Engineering, MIT
Electrically mediated phenomena in tissues and biopolymers; cartilage biomechanics; computational modeling of electric field distributions in the human thorax and heart during defibrillation; transcranial magnetic stimulation.

MAXIM D. FRANK-KAMENETSKII
Professor, Biomedical Engineering
PhD, Biophysics, Moscow Physical-Technical Institute, USSR
DNA structures; DNA topology; DNA function; PNA (peptide nucleic acid).

JAMES GALAGAN
Associate Professor, Biomedical Engineering and Microbiology, BUSM; Associate Director, Systems Biology of Infectious Disease Core NEIDL
PhD, Computational Neuroscience, MIT
Develop efficient and accurate methodologies for the analysis of genomic data, with a particular focus on infectious diseases.
MARK GRINSTAFF  
Professor, Biomedical Engineering and Chemistry  
PHD, University of Illinois at Urbana-Champaign  
Biomaterials; tissue engineering; drug delivery; macromolecular chemistry and engineering, self-assembly; nanodevices.

XUE HAN  
Assistant Professor, Biomedical Engineering  
PHD, Physiology, University of Wisconsin-Madison  
Neurotechnology; optical neural modulation; optogenetics; neural prosthetics; neural network dynamics; brain rhythms; neurological and psychiatric diseases; cognition.

ANDREW C. JACKSON  
Professor, Biomedical Engineering  
PHD, Biophysics and Physiology, University of Mississippi Medical School  
Respiratory physiology; respiratory mechanics; role of airway closure in asthma.

SIMON KASIF  
Professor, Biomedical Engineering  
PHD, Computer Science, University of Maryland  
Bioinformatics; Computational Genomics; Algorithm Design; Artificial Intelligence; High Performance Systems.

AHMAD (MO) KHALIL  
Assistant Professor, Biomedical Engineering  
PHD, Mechanical Engineering, MIT  
Synthetic biology; systems biology; programmable microfluidics; transcription regulation; mechanobiology; single-cell analysis; single-molecule biophysics.

CATHERINE KLAPPERICH  
Professor, Biomedical Engineering  
PHD, Mechanical Engineering, University of California, Berkeley  
Design of new molecular diagnostics and appropriate technologies for healthcare.

KENNETH R. LUTCHEN  
Professor, Biomedical Engineering; Dean, College of Engineering  
PHD, Biomedical Engineering, Case Western  
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Given the prevalence of Zika pandemics in the developing world and lack of field tests that diagnose infections, we aim to develop a low-cost, point-of-care, rapid diagnostic. Since Zika causes severe neurological defects and is oftentimes asymptomatic, accurate, field-friendly diagnostic methods are critical. Therefore, it may be necessary to screen many people in a short span of time to track how widely the virus has spread. Our goal is to develop a test that will be simple to use and provide a diagnosis with minimal instrumentation and training. This point-of-care test will be a microfluidic chip on which Zika will be detected. A patient’s saliva sample will be loaded onto the device and purified to isolate viral RNA, which will subsequently be amplified and detected. We plan to streamline the amplification process by utilizing loop-mediated isothermal amplification, which runs at a constant temperature. This distinct advantage will drastically reduce instrumentation. The amplified RNA will be detected colorimetrically using pH-sensing dyes. Our assay’s lower limit of detection is below the viral load of Zika in saliva, and is highly specific when used against viruses with genomic homogeneity. Finally, amplification occurs in less than 30 minutes, making this an effective point-of-care diagnostic.
A Low-Cost Diagnostic Test for Cervical Cancer Screening

Allison Ramsey, Tania To

A point-of-care (POC) diagnostic chip will be created in order to detect two strains of Human Papillomavirus (HPV), HPV 16 and HPV 18, in low resource settings. Globally, HPV 16 and HPV 18 account for 70% of the cases of cervical cancer, which is the third most common cancer worldwide with 80% of the cases occurring in the developing world. A new cartridge will be designed for housing the assay that detects HPV. This assay includes a heating step, which requires the DNA to be heated up to 65°C for 30 minutes. A heating device that can be used in low-resource settings, ideally one that does not require electricity, will be designed so that it can sustain a temperature of 65°C for 45 minutes and will be integrated into the cartridge. The prototype of the cartridge will be 3D printed and the heating method will use water, flameless ration heater, a powder mixture of Mg-Fe alloy, NaCl, antifoaming reagents, and inert filler. The new chip is capable of properly housing an HPV 18 assay and sustaining a temperature between 60-65°C for over 30 minutes, which shows promise of this device being a viable diagnostic test for HPV detection in low-resource settings.
The combination of peptide nucleic-acid based (PNA) technology and rolling circle amplification (RCA) enables us to develop a rapid bacterial pathogen diagnostic device for low-resource settings. In order to develop this, PNA-RCA is adapted for use with lateral flow assay (LFA) strips, which enables label-free visual detection and simple on site assessment at the point of care. The PNA technology targets the DNA sequence of the pathogen, with high specificity, and RCA isothermally amplifies the sequence into a G-quadruplex. The G-quadruplex, with the addition of hemin, becomes a functional DNAzyme, whose catalytic activity leads to colorimetric detection. Specifically, the device is designed to diagnose Staphylococcus aureus and simultaneously discriminate between antibiotic methicillin-sensitive (MSSA) versus methicillin-resistant (MRSA) strains. A twofold approach was used to develop the device: 1) adapting the PNA-RCA assay to a lateral flow strips format by optimizing the components of the LFA strip and the reagents that form the DNAzyme and the reaction it catalyzes and 2) designing the PNA-RCA for detection of \textit{S. aureus} and methicillin resistance. Our data suggests that adapting PNA-RCA to the lateral flow assay is possible, but not ideal due to the colorimetric output of the DNAzyme reaction.
SESSION IIa

Diagnostics II
Ear Biometric Scanner for Improved Patient identification in Zambia

Rachael Campion, Lauren Etter, David Martinez

In Zambia, as well as many other Sub-Saharan countries, patient identification to ensure linkage to health records is a major road block for the continuum of healthcare. This problem leads to repeat vaccinations, unnecessary or incomplete antibiotic regimens and potential misdiagnosis due to unknown medical history. In absence of unique identifiers such as social security numbers, presence of high rates of illiteracy, and an aversion to finger printing, a different solution is needed. Our project aims to provide an efficient platform and procedure for ear biometric identification. We’ve developed a device which improves image capture of the patient’s ear, allowing for more accurate identification rates.

We pursued this objective by designing and testing a device which standardizes the image capture procedure while improving patient identification rate. After developing this device, our team completed an experimental trial with 220 participants in order to test that the device improved the function of the identification algorithm.

We found that our device and procedure improved the accuracy of patient identification using the ear biometric algorithm by more than 10%. This improvement confirms the necessity of our device and procedure in conjunction with the algorithm in order to accurately identify and link patients with their medical records in Zambia.
Flexible Electrodes for Portable Microfluidic Diagnostics

Kyle Cheng, Matthew Kim

In low resource settings, Hepatitis B is underdiagnosed due to limited resources. Current gold-standard laboratory diagnostics, such as PCR, have high sensitivity but often require trained personnel, expensive equipment, and time; modern field deployable diagnostics, such as surface antigen tests, are inexpensive and easier to use but are less sensitive than the gold-standard diagnostics. Electrochemical detection of DNA on a portable device will allow for a diagnostic that offers the sensitivity of current laboratory diagnostics while being inexpensive and easy to use. This device requires uniform, screen-printed carbon electrodes and a DNA detection assay. A mechanical device will aid the process of screen-printing the electrodes in order to eliminate the variability that arises due to manual screen printing. An assay will allow for the detection of Hepatitis B DNA immobilized to the surface of a gold coated electrode via a thiol-linkage. The DNA will be detected via cyclic voltammetry. The cyclic voltammograms generated reveal differences between single-stranded DNA and hybridized DNA. This suggests the ability to electrochemically detect DNA. Future work includes making the device more robust and improving its limit of detection.
Dimethylsulfoniopropionate (DMSP) is an organosulfur compound with critical anti-oxidative functions in higher-order marine organisms such as ocean coral, which show an increase in DMSP expression as a response to rising temperatures in their ecosystems. We attempted to create a biosensor for monitoring DMSP levels surrounding marine coral populations in order to detect occurrence of heat and oxidative stress prior to a fatal bleaching event. Our biosensor employs a class of enzymes called DMSP-lyases, which produce a proton and acrylate by cleaving DMSP molecules. This breakdown is tracked redundantly by monitoring unique emission spectra from a fluorescent pH-sensitive dye and from binding of acrylate to a fluorescently coupled acuR transcription factor. Our integrated computational model of this process is incorporated into the sensor’s processing component, relating and back-calculating the fluorescent readout to an initial concentration of DMSP in the sample. These readouts are translated via voltage signals entering the calibrated processing unit and out through a custom LED display.
Identifying Pathogens Using Real-Time PCR and Pseudo-Complementary Primers with Label-Free Multiplex Capabilities

Jennifer Asaro, Arjun Patel, Nicholas Serdaru

Current reliable methods for pathogen detection and identification employ cell cultures, can take several days, and often result in misdiagnosis which can be deadly. This project involves a method for simultaneous detection of pathogens using multiple bacterial samples. The group aims to develop a rapid and accurate diagnostic method for *E. coli*, *Salmonella*, and *Shigella*, three bacteria that are genetically and symptomatically similar. First, genes specific to each bacterium are selected and research is conducted to find or design primer sets for amplification of these genes. Using both PCR and real-time PCR, these primers are tested for specificity, ensuring no cross-reactivity between primers and non-target DNA. With successful results showing no nonspecific amplification, the primers are replaced with pseudo-complementary (PC) primers, which contain modified versions of the bases adenine and thymine to eliminate the formation of primer dimers. Finally, multiplexed real-time PCR is run using PC primers and a nonspecific intercalator, and melt-curve analysis is performed to identify which bacteria is present in a sample based on product melting temperature. Preliminary results have shown successful identification of primer sets with no cross-reactivity. Real-time PCR results of primers against their own targets display distinct fluorescence peaks, indicating presence of bacteria. Future research and experiments will utilize PC primers to perform further multiplexed analysis of samples.
SoundMedicine: Saving Lives through the Pneumonia Diagnosing App

Anna Hughes and Kenny Song

Pneumonia is the leading cause of death of children globally. Although treatment for the disease is available in even the most undeveloped countries, pneumonia often results in fatality due to late diagnosis. Current diagnosis requires a physical checkup in which a doctor listens to the patient's lungs and then recommends further medical testing. In low resource settings, a doctor is usually not available and in developed countries many forgo seeing a doctor due to financial concern. SoundMedicine aims to reduce the mortality of pneumonia by making diagnosis more accessible and affordable through telemedicine. The company hopes to provide a cheap but reliable method for detecting pneumonia in low resource settings through the implementation of a stethoscope-like phone accessory and an app that allows users to collect pulmonary data and share it with a doctor.
SESSION IIb

Biomechanics
Osteoarthritis (OA) is a degenerative disease characterized by cartilage degradation and exacerbated joint mechanics. Viscosupplements are administered to patients with early OA of the knee in the form of biolubricant injections to restore lubricous joint mechanics. Optimally designed biolubricants would minimize further cartilage wear and exhibit high residence time upon injection. We report on a synthetic, crosslinked polymer, the properties of which can be fine-tuned to achieve desirable design specifications as a biolubricant injection candidate. We synthesized lubricant formulations of crosslinked poly(2-methacryloxyethyl phosphorylcholine) (pMPC) and characterized their material properties. We then studied cartilage tribology in bovine osteochondral explants submerged in the liquid formulations. Viscosity of the polymer was found to be positively correlated with concentration and crosslinking density. Polymer composition influenced differences in cartilage lubrication. The tunability and viscoelasticity demonstrated in crosslinked pMPC clarifies the dependence of the polymer’s lubricity on its synthetic design specifications.
A Comparative Biomechanical Study of the Surgical Reconstruction of the Scapholunate Ligament

Beatrice Baumberger Alirriba, Isaac Dashefsky, Riley Morien

Injury of the scapholunate ligament results in scapholunate dissociation and is the most common cause of carpal instability. Two methods of surgical repair, capsulodesis and tenodesis, focus on the repair of the dorsal segment of the ligament while the front-back looping method focuses on the repair of both the dorsal and volar aspect of the ligament. The purpose of this study is to determine which method of surgical repair of the scapholunate ligament is the most biomechanically productive. Given that the front-back looping method focuses on both the dorsal and volar aspects of the ligament, it is hypothesized that this procedure will provide optimal biomechanics for the wrist. Under the guidance of Dr. Ara Nazarian at BIDMC, the scapholunate ligaments of 18 human cadaveric wrist specimens were artificially ruptured and surgically repaired using the techniques of capsulodesis, tenodesis, and front-back looping. To compare the surgical methods, a wrist motion simulator was constructed to move the cadaveric wrists through the motions of flexion/extension, radial/ulnar deviation, and dart throwing motion. The simulator will simultaneously collect force data within the joint space and motion data within the scapholunate dissociation gap. Comparing these measures to those of control specimens, a recommendation will be generated for which surgical method is the most biomechanically productive.
Though there is a high prevalence of debilitating tendon injuries, the healthcare industry lacks a comprehensive tear progression model to treat such injuries. The long-term goal of this project is to create a function of tendon fatigue, which will be accomplished through in-vivo studies of biomechanical testing performed on rats. This project focuses on creating the mechanical testing apparatus and protocol for these studies. Each trial will restrain the rat while applying cyclic force loads to the partially torn patellar tendons. The apparatus will consist of a MATLAB programmed linear actuator, a rat-securement platform, a tendon-securement fixation device and a force-reading load cell. Future experiments using this device will provide histological results and model the mechanical and biological healing properties of tendon tissue. The data from these experiments will be used to create a function for fatigue, which will be implemented into simulation packages. These packages could provide better treatment protocols and reduce high tendon retear rates.
This project will demonstrate a method for obtaining quantitative measurements of the displacement across the two facet joints (FJs) of the T8-T9 vertebrae and changes in vertebral alignment during axial compression and flexion loading. T7-T9 spine segments were loaded in a stepwise manner to replicate in vivo loading with a micro-computed tomography (µCT) image taken at each interval. Individual surface models of the unloaded T8 and T9 vertebrae were created and the resultant point clouds were overlaid on the µCT images of the sequential time steps. Translation and rotation matrices specify the relative positions of the T8 and T9 vertebrae at each load increment, allowing for a quantitative tracking of their motion over the course of testing. From these matrices the position and orientation are obtained for each vertebral body and an algorithm is used to calculate how the space across the FJs changes to quantify displacement. Vertebral alignment can be quantified based on the rotation matrices denoting the orientation of each vertebra.
Lesion-Specific QCT to Improve Prediction of Pathologic Vertebrae Fracture Load

Bryan Chiakpo, Mohit Dangeti, John Ziamandanis

Vertebral bone is the most common site for skeletal metastasis among cancer patients. Pathologic vertebral fractures occur in about 50% of vertebrae with metastases, and these can lead to mechanical instability and neurological problems, with potentially fatal outcomes. The project aim is to characterize the effect of lytic and blastic metastases on the architectural and mechanical properties of human vertebral bone. This study utilizes both architectural and mechanical data to provide a better understanding of the effects of each lesion. Studying bone cores, as opposed to whole vertebrae, provides more detailed insight into how each lesion affects the trabecular bone on individual vertebrae. After the bone cores were imaged using MicroCT, they underwent compression testing to determine the maximum load of each. The qualitative and quantitative data from imaging coupled with the quantitative data from the compression test were used to create and analyze stress-strain curves. By systematically distinguishing the characteristics of lytic and blastic metastases, we will in theory provide physicians a protocol that will be able to quantitatively predict fractures in vertebrae due to metastatic lesions.
SESSION IIIa

Health Monitoring
Neonatal Vitals Monitoring Pad

Josef Atmaz Al-Sibaie, Teja Karri, & Eric Loreaux

At the moment, Boston Medical Center’s NICU specialists are called into approximately half of newborn deliveries – an unnecessarily high fraction due to a lack of ability to quickly and accurately assess the health status of at-risk newborn infants. NICU specialists are trained to make these assessments, but even when they are present to do so, the tools at their disposal are less than optimal. Obtaining heart rate information through the use of applied electrodes can be complicated by an inability to adhere to the newborn’s slippery skin and the tangling of many individual electrode wires. For oxygen saturation information, disposable sensors can be applied to a newborn’s hand or foot, but the device can often become detached and the signal muddled by the severe movement of a newborn’s limbs. Both specialists and non-specialists can simply lay a newborn infant on top of our uniquely designed plastic monitoring pad to immediately obtain vitals data. By making contact with the patient’s back, embedded electrodes can detect heart rate and a highly advanced SpO2 sensor can provide oxygen saturation data. In summary, we aim to incorporate into the delivery room a device that makes vitals monitoring faster and easier for all healthcare practitioners to relieve the strain placed on NICU specialists when such monitoring cannot be performed in an efficient manner.
Congestive Heart Failure (CHF) is a disease that affects 5.7 million people in the United States. However, CHF is not only prevalent in the US, it is a global epidemic. CHF is part of the leading cause of death worldwide, with over 23 million cases globally. When a CHF patient's symptoms begin to worsen their sleep quality declines and their sleep posture gets steeper, meaning they will sleep in a more upright position. In collaboration with Jana Care Inc., a medical device company out of Boston, Massachusetts, our team designed a device that would monitor CHF patient’s sleep posture. This device would, in theory, alert the patient to see their physician before their symptoms would reach hospitalization levels. To monitor a patient’s increased sleep posture, our team utilized the depth camera along with the infrared camera in an Xbox Kinect. In addition, we wrote a MATLAB script which acquired still frames of the patient. The code analyzed still frames by identifying the head and the mattress, then by counting the pixels between the identified objects and converting this number to a distance. If the percentage change in height would increase, the patient would be alerted to seek help. Our device provides a non-invasive way to track sleep. Earlier recognition of worsening symptoms can be achieved, allowing for earlier intervention which can help regulate a patient’s symptoms in order to give them more high quality days of life.
Micro Battery-Free Wireless Sensor for In-hospital Neonatal Monitoring

Chen Dong, Andrew Russo, Zhengyang Zhang, Zhiqian Zhou

Sudden and unexpected infant death (SUID) is one of the leading causes of infant death. However, most of them can be avoided using low-tech and low-cost care. In this project, we present an ultra-thin, on-body sensor that offers non-intrusive and continuous neonatal heart rate (HR) monitoring as well as battery-free, wireless signal transmission to a danger-detection system in a standard hospital nursery. The system is realized by implementing pulse oximetry for heart rate detection and Radio-frequency Identification (RFID) technology, for sensor powering and data transmission. The team designed and built a low energy-consumption heart rate acquisition circuit to interface with a commercially procurable transceiver in combination of a graphical user interface (GUI) with embedded signal processing algorithm and alarm system. The accuracy of obtained heart rate from the sensor was also tested against electrocardiography (ECG), the gold standard for non-invasive HR measurement. The project serves as a proof-of-concept for a novel, low cost and convenient solution for both parents and hospital staffs to monitor delivered infants outside of Neonatal Intensive Care Units (NICU).
Respiratory illnesses pose a major threat to many people throughout the world; ailments such as asthma, bronchitis, and cystic fibrosis make life very challenging for those affected. Steroid treatments are often used to combat these illnesses. Currently, the only way of determining the effectiveness of such treatments is to monitor patients’ general respiratory health over time. The fractional exhaled nitric oxide (FeNO) in breath has been found to be an indicator of respiratory health. Physicians can monitor patients’ FeNO levels in their offices, but no take-home methods exist yet. For these reasons, the proposed product allows for the monitoring of FeNO in real-time via an iPhone application. In this way, patients can see if their treatments or lifestyle changes are bringing their FeNO levels back to a healthy concentration – between 10 and 40 parts per billion (ppb). The device is a FeNO breathalyzer attached to an iPhone; subjects breathe into the breathing chamber and within seconds the iPhone displays their FeNO concentration in ppb. It also shows subjects’ past measurements so they can track their progress. Currently, however, there are no small nitric oxide (NO) sensors on the market that can detect NO in the ppb range. The product created, therefore, is a proof of concept device that uses a thermistor in place of an NO sensor. All the necessary coding and circuitry elements required to get an accurate temperature reading have been designed and implemented, demonstrating that, once technology allows, the thermistor can be swapped for an NO sensor to create a first-of-its kind iOS NO meter.
An estimated 40% of college students - nearly 600,000 students nationwide - abuse alcohol in a way that is characterized as binge drinking. Studies have found that “protective behaviors” being taught at university seminars in the United States lowers the risks for alcohol related incidences and facilitates safer drinking habits. This projects aims to provide users with a tangible representation of the level of intoxication they are experiencing and to encourage safer drinking practices. Near infrared (NIR) light technologies have been used to measure blood oxygenation and to monitor metabolites such as glucose through the skin. Our device utilizes NIR light to transdermally monitor ethanol concentration in blood, providing blood alcohol content (BAC) with minimal user input. An accompanying iOS application logs and displays the user’s BAC based on their biographical data, providing users with BAC readings according to weight, height, and gender. The application logs BAC history graphically over time and provides alerts and tips to the user when their BAC reaches hazardous levels. Various ethanol and water mixtures were created to simulate intrinsic BAC levels and scanned using a NIR spectrophotometer. The results showed a direct correlation between absorbance and ethanol concentration. This correlation allows the usage of NIR to detect for ethanol concentration and therefore BAC in an individual with the proper equipment.
SESSION IIIb

Tissue Engineering
Drug Delivery
Disease Models I
Conventional therapeutic methods for cancer patients, such as chemotherapy or radiotherapy, are incapable of targeting only cancerous cells and have a high chance of damaging normal cells during treatment. However, further improvements of therapeutic strategies have been hampered by the limited understanding of tumor cell infiltration. Generation of three-dimensional (3D) tumor tissue composites would be vital towards investigating cancer cell behavior with \textit{in vivo}-like environment, allowing an opportunity for a more direct observation of cancer cell migration and metastasis. The main objective of this project is the development of 3D skin tumor models containing melanoma cells using bioprinting technique. We adapted a new type of electromechanical microvalves for securing stable nozzles for the bioprinting of cells and hydrogels. Custom-designed housings were built for a multi-channel dispenser set as well as for a temperature-controllable dispenser. The dispensing conditions of biomaterials such as water, culture media (cell suspension), collagen precursor, and gelatin were characterized by varying the printing parameters of pneumatic pressure (1–15 psi), valve opening duration (400–700 µs), and printing resolution (300–600 µm). Based on the characterization, we developed multiple bioprinting protocols for 3D skin tumor models that represent the dermal equivalence of having melanoma, with/without a fluidic channel (for perfusion/vasculature). The printed human dermal fibroblasts and melanoma cells in the tissue composites were viable and showed morphological changes during the culture period. The bioprinting of 3D skin tumor models will serve as a platform for studying the migration and infiltration of melanoma cells.
Does the Inter-epithelial Transfer of Exosomal NOS Promote Inflammation in Sinonasal Cells?

Ander Gomez, Conor Sullivan

Knowledge of the functionality and molecular composition of sinonasal epithelial cell-derived exosomes is limited. Exosomes are nano-sized extracellular vesicles that are important in cell-to-cell communication and the transportation of signaling molecules, integral membrane proteins, and cytoplasmic proteins. The goals of the proposed research were to determine if sinonasal derived exosomes are capable of transporting functional nitric oxide synthase (NOS) to gain an understanding of the unknown propagation of inflammation in chronic rhinosinusitis (CRS) and to understand its role in the innate immunity of the nasal sinuses. NOS present in exosomes can initiate the production of nitric oxide, which is involved with the innate immune system by either contribution to tissue destruction or the exertion of immunoregulatory activity. Immunohistochemistry staining of exosome-exposed epithelia demonstrated functional transport of NOS into the cells. Exosomes were dosed with various nontoxic inhibitors to identify the role these exosomal proteins play in the cholinergic anti-inflammatory pathway of the sinuses. After exposure to inhibitors, the exosomes appear to act on the MAPK and IKK pathways, both known to be involved with the initiation of inflammation. With CRS being one of the most prevalent chronic illnesses in the United States, an improved understanding of the pathogenesis of CRS could lead to more effective treatments for CRS and other sinonasal diseases.
Nanoparticles for Oligonucleotide and Curcumin Delivery to Breast Cancer Cells

Erin Chang, Alexander Czaja

Triple negative breast cancer (TNBC) cells lack estrogen, progesterone, and HER2 receptors, rendering drugs that target these receptors on other breast cancer cell types ineffective as chemotherapeutic options. Epidermal growth factor receptor (EGFR) inhibitors have been used to circumvent this problem in other cancers; however, due to PTEN mutations in some TNBC cells, EGFR inhibitors alone have made minimal impact on TNBC tumor suppression. This mutation induces an overactive PI3K pathway, which allows the cancerous cells to proliferate without bound and avoid apoptosis. By targeting the PI3K pathway using oligonucleotides and curcumin, the aim of this study is to suppress this affected pathway such that an EGFR inhibitor can be used in conjunction to effectively to renew the ability to achieve cell cycle arrest and apoptosis, destroying the tumor. Here, we explore the use of calcium phosphate nanoparticles for small interfering RNA (siRNA) delivery to tumor cells and the use of lipid polymer hybrid nanoparticles for curcumin delivery. Through characterizations of their loading efficiencies and release kinetics, we aim to reduce cell viability in MDA-MB-468 breast cancer cells using combination therapies of the EGFR inhibitor, gefitinib, and each PI3K inhibitor, respectively.
Adipose tissue (AT) performs critical metabolic and endocrine functions that are compromised in diseases such as obesity. The cellular mechanisms underlying obesity are complex and involve extracellular matrix remodeling, abnormal lipid accumulation, and differentiation of adipocyte precursor cells. Efforts to develop obesity treatment would benefit from an engineered AT that could model specific pathologies and serve as a platform for testing pharmaceutical interventions that target adipocyte growth. We designed 3D adipose models using mouse 3T3-L1 adipocytes in type I collagen gels and an accompanying algorithm that quantifies adipocyte growth. We first created an algorithm that detects LD sizes in computer-generated ideal images, then modified this algorithm to detect LDs in phase images of our adipose models. All designs successfully accumulated lipid, though the algorithm’s performance varied across designs. The algorithm more accurately identified LDs in images of simple monolayer cultures. LDs in more complex collagen constructs were difficult to isolate from the background due to the designs’ 3D composition. When choosing one of these designs, one must weigh the algorithm’s accuracy against the design’s complexity. While simple designs lack structural complexity, the algorithm more accurately quantifies their lipid accumulation. Further optimization of this algorithm and accompanying adipose tissue models is required to develop a physiologically accurate engineered adipose tissue.
Optimizing Calcium Phosphate Particles for Growth-Factor Delivery

Shahd Bawarith, Lidia De Barros, Shaheer Piracha, Sruti Raja, Fiza Shaukat

Over 400,000 Americans receive spinal fusions annually to treat back pain. This procedure usually involves the collection of allografts or autografts which have a high risk of complications. An alternative approach is to naturally stimulate bone growth using bone morphogenetic protein (BMP). Bioventus is developing a carrier comprised of calcium-deficient hydroxyapatite (CDHA) granules for delivery of BMP. The objective of this project is to reduce the in vivo residence time of CDHA granules to less than six months without compromising the porous architecture or BMP binding properties of the granules. Based on evidence for carbonated CDHA found in native bone mineral, adding carbonate to the current reaction may accelerate resorption of the CDHA granules. In a post-conversion reaction, NH₄HCO₃ was introduced after CDHA synthesis. Alternatively, in a co-conversion substitution reaction, NH₄HCO₃ was introduced during CDHA synthesis. Solubility assays and Fourier Transform Infrared (FTIR) Spectroscopy were used to evaluate the chemical characteristics of the granules. FTIR demonstrated that carbonate was detected in CDHA granules following the co-conversion reaction, whereas the post-conversion reaction showed no addition of carbonate. Carbonate-containing CDHA exhibited an increase in solubility compared to control CDHA. In conclusion, the co-conversion reaction proved to be an effective approach to carbonating CDHA granules and may thereby decrease the in vivo residence time of these materials.
SESSION IVa

Imaging and Tracking
Fluorescent imaging is one of the most popular techniques for visualizing neurons and studying their behavior in our brains. This technique, however, is not without its flaws. In the case of 2-Photon fluorescence imaging, low signal-to-noise ratios and large data sets complicate post-experimental data processing. Current implemented methods are time-intensive, require familiarity with user-unfriendly software, and produce inconsistent outputs due to user and experimental variability. To resolve these issues, we developed a custom MATLAB package to decrease the amount of time spent processing data while still producing accurate and consistent outputs. Furthermore, our package is designed to be operable by users with minimal training. We were able to dramatically decrease the time needed to process one experiment by both optimizing file loading and designing an algorithm to automatically find cells, extract fluorescence, and perform statistical analysis. The latter also had the benefit of making the output more consistent between users. Through various statistical tests, we were able to show that the results produced by our MATLAB package were the same as those generated from previously implemented methods by the Cruz-Martín Lab - thus confirming that the new algorithms used were valid.
Optical tracking of anesthetized Caenorhabditis elegans

Danielle Dougherty, Padric Garden

Caenorhabditis elegans is a multicellular worm frequently used as a model system due to its simple physiology, fully mapped genome, and more uniquely a fully mapped connectome. They display only basic locomotion behavior, which can be connected back to its nervous system using its connectome. By tracking this locomotion we can glean information about changes in their neurology. To accomplish this, we developed an imaging rig and software to allow for long term tracking of C. elegans. The physical set-up was optimized to enhance image quality. Tracking software was developed that utilizes a cost-minimization algorithm to improve fidelity and reduce processing time by employing parallel tracking. Currently, the action of general anesthesia is still not entirely understood. Potentially, research in this model system could be used to elucidate the neuronal mechanisms of anesthesia. With this idea in mind, we performed experiments to study worm behavior after exposure to anesthesia and neuron cutting surgery. Ultimately, our project seeks to advance the ability to analyze the movement of C. elegans. Due to their use as a model system, this information can be used to inform our understanding of human biology.
Real Time Muscle Movement Quantification by Ultrasound for Individuals After Stroke

Monika Lee, Paul Sliwinski, Jennifer Rock

With the current technology available to clinics, professionals assisting in the rehabilitation of stroke patients lack a viable method of quantifying dynamic muscle behavior, and thus rely on high level, qualitative assessments of muscle motion. To address this, we developed a system that produces quantitative measurements of calf muscle motion during patient walking. We created and tested both a mechanical system to support an ultrasound system that collects real time data of muscle activity during walking as well as an algorithm to produce quantitative measurements of muscle motion. Since ultrasound is noninvasive, provides high spatial resolution, and allows for muscle differentiation, it was chosen as the method of muscle measurement in this project. The mechanical system is able to steadily hold the ultrasound transducer in any orientation and position along the calf during dynamic movement, and the algorithm can display gastrocnemius pennation angle and muscle fiber length measurements as they change at different points of the gait cycle. This system is intended to be used in conjunction with other available methods of assessing muscle motion in both the clinic and the research environment in order to provide currently unavailable measurements of muscle motion. In turn, this will allow professionals to create better and more specific therapies for individuals after stroke.
Wireless Optical Recording of Neural Activity in Behaving Mice

Jessica Lin and Paul Yao

The neural pathways involved in brain disorders are not well understood. To better understand the brain many researchers monitor neural activity in mice using fluorescent reporters. However, current optical recording techniques typically require head restraints or wires, which limit movement and thus the types of behaviors that can be observed. As a result, there have been few studies that collect neural data from multiple mice during natural interactions, which would be beneficial for understanding social disorders. In order to combat these limitations, we created a miniaturized wireless optical recording device that meets the needs of transmitting data over a distance of at least two feet, recording data simultaneously in multiple mice, and wirelessly controlling the excitation light intensity. The device is also lightweight and affordable. Jessica programmed the device using Arduino and created a Matlab script to process and display the data. Paul designed the detector circuit and constructed the hardware components. We tested the sensitivity and temporal resolution of the device and found it to be in an acceptable range for capturing dynamics of neural activity. With our completed device we were able to collect preliminary data from specimens of fixed fluorescence. This system could potentially be scaled to track activity in large numbers of animals in parallel as they engage in natural social interactions.
Simultaneous localization and mapping using biologically inspired interactions of visual feature angle and spatial location

Micheal Gutman, Clark Ikezu, Avninder Singh

Grid cells of rat medial entorhinal cortex have been hypothesized to form a “cognitive spatial map”, because of their ability to fire action potentials whenever the rat walks over regular points of two-dimensional space. We expand the rebound-spiking, “wave” model of grid cell firing (Hasselmo & Shay (2014) Front Syst Neurosci, 8, 201), by modelling velocity dependent firing of medial septal interneurons, and expanding the range of spatial directions of the travelling wave inputs onto the grid cells. In this model, grid cells have the ability to fire action potentials (spikes) after inhibition. This rebound spike has a characteristic time constant, which gives the grid cell a resonant frequency, as demonstrated by experiment. We exploit this by modelling spatially-directed waves of inhibition, whose frequencies are proportional to the running speed of a rat projected along these directions. The model demonstrates the need for an excitatory population of medial septal interneurons to accurately transform experimental velocity measurements into the medial septal network’s total firing rate. Simple, angular representations of a visual environment also aid in the formation of regular firing fields. Simulations also show reaction-diffusion (Turing) patterns naturally formed by the grid cell network, indicating a possible mechanism for developing the premature grid cell network.
Modelling and Measuring Particle Deposition in Asymmetric Airways Using 3D Printing

Edward Taylor, Daniel Wiley

The goal of the research presented is to accurately model the morphology of a mammalian respiratory system and study how breathing patterns affect particle deposition. A current lack of physical models within the field of pulmonology has up to this point limited the understanding of particle behavior in the lungs. By printing a morphologically accurate airway, it becomes possible to examine the effect of breathing patterns on flow within the lungs. A 3D printed model that captures the complexity of mammalian airways would increase the ability of researchers to analyze the best drug delivery method for patients needing inhalants. The results from this research aim to dispute the current computational models that treat the Reynolds Number of the flow as insignificant for particle capture rate. Additionally, the project seeks to explore the difference in controlled versus variable ventilation patterns on how particles settle in the lungs.
SESSION IVb

Devices
Comparison and Implementation of Trapezoidal and FOC Commutation

Eugene Kwan and Evan Reynolds

Brushless direct current (BLDC) motors have no contact between the rotors and stators and are electrically commutated via changing current. Electrical commutation is completed by determining the angular position of each stator and supplying a calculated current to the stator which creates a magnetic field that attracts the internal rotor to a new position. HeartWare Inc. currently utilizes trapezoidal commutation to drive their ventricular assist devices (VADs). Trapezoidal commutation is robust and easy to implement but can be inefficient and unstable which causes small vibrations called torque ripples. Torque ripples occur when changing motor settings and can cause discomfort within the patient. This project aims to implement Field Oriented Control (FOC) into HeartWare’s MVAD system to determine if FOC can provide a more stable and efficient commutation method for HeartWare and their patients. Overshoot and torque ripple data was acquired and analyzed in MatLab to compare the stability of trapezoidal and FOC commutation. Experiments showed that FOC lowered overshoot by 6x while torque ripple was improved by 7x. Although trapezoidal commutation requires less computation, these experiments show that FOC can provide a more stable drive for HeartWare’s heart pumps.
Exploration of Lubricity in Transcatheter Delivery Systems
Undina Gisladottir, Wayne Huynh, Megan Priem

Aortic stenosis, a major contributor to heart disease, the leading cause of death in the United States, is often treated non-invasively via a transcatheter aortic valve implementation (TAVI) system. In working with Medtronic, the goal of this design project is to decrease shaft interaction and valve deployment forces experienced by the physician performing the procedure by introducing a hydrophilic material to the delivery system. Friction and simulation testing were performed to ensure existing specifications were met while reducing frictional forces within the system. Testing both a manufactured hydrophilic extrusion and an applied hydrophilic coating, initial findings indicated that the hydrophilic extrusion provided poor results, whereas the applied hydrophilic coating showed greater promise. While more extensive research and testing should be devoted to this project in the future, current results indicate that the hydrophilic extrusion process must be adjusted for future applications and that applying a hydrophilic coating to the existing shafts shows immediate improved performance.
PID Control of Treadmill Speed Using Human Kinematics
Jacob Ferriero, Matti Groll, Elizabeth Kenny, Brian Weden

Gait analysis—a cornerstone of biomechanics research—is typically conducted on force plate instrumented treadmills due to space constraints. A common problem caused by this method of data collection is the subject’s lack of real-time velocity during walking and running sessions due to the treadmill’s hardcoded acceleration profiles. Constraining the subject's acceleration profile fails to simulate normal overground walking (OGW) and particularly obstructs the observation of certain scenarios of interest, including the study of walk-to-run transitions and cases where the subject may be unable to maintain a constant velocity or follow a predetermined acceleration profile. This project focuses on development of an algorithm to achieve live, user-driven velocity on an instrumented treadmill through automated changes in belt speed based on perturbations in human subjects’ kinematics. Essentially, the controller increases belt speed when the subject initiates acceleration, and decreases belt speed as the subject initiates deceleration, as indicated by the relative change in subject position. The foundation of this project is a Simulink model which calculates the subject’s anterior-posterior pelvis location as a function of the sagittal plane force and moment. This location was the process variable for the PID controller tuned in this model and optimized for the instrumented treadmill in Sargent College. This controller creates a possibility for more accurate research of a wider array walking and running scenarios via treadmill.
Epinephrine auto injectors (EpiPens) are frequently the first line of defense for those who suffer from severe allergic reactions. However, EpiPens lose functionality if stored outside 59-86°Fahrenheit. The focus of this project was the development, design, and production of an epinephrine auto injector storage device that would be thermally secure, transportable, and affordable. Water is commonly used by other devices on the market; instead, our product will use Phase Change Material (PCM) capable of storing "5-14 times more heat per unit volume than sensible storage materials such as water."¹² We ran a series of tests to determine which material(s) (i.e. water, PCMs, or PCM slurry) would be best to protect the EpiPens in various temperature conditions. Based on our data, PCM was more effective than water in temperature regulation. We then adapted a thermos to be a more effective EpiPen container by designing storage pouches for the EpiPens to prevent contact with the PCM and modifying the lid to be more thermally secure. Given the low material costs, and high performance capabilities, PCM is a highly viable option to protect the EpiPens in harsh temperature conditions.

Design of an Electromyographic Switch for Communication System Access
Victoria Frick, Katherine Girouard, Evi Shiakolas

Augmentative and alternative communication (AAC) systems provide patients with specialized methods to communicate when oral communication is not possible. However, some patients have insufficient motor control to access current AAC systems (e.g., via head-tracker, eye-tracker, button-style mechanical switch). This project delivers a device that directly replaces a mechanical switch for AAC operation by capturing muscle activity via surface electromyography (sEMG). It serves the subcategory of patients who possess volitional control over one or more muscle groups but lack the strength or coordination to activate a mechanical switch. The device uses the signal processing capabilities of an Arduino UNO equipped with sEMG-capable hardware and Arduino Software to amplify, filter, and smooth the signal from a patient’s voluntary muscle activity. A patient-specific threshold is used to determine the state of the switch and produce a binary output that matches that of an existing mechanical switch. The complete sEMG-based switch is provided with full documentation detailing instructions for sensor placement over any volitionally-controlled muscle group, calibration, operation, and maintenance procedures. The device design is modular and replicable with commercially-available parts and open-source software for use by any hospital or caregiver serving the target population.
HeartInSole: A Remote Monitoring Device for Congestive Heart Failure Patients

Susanna Chen, Austin Lent, Brianna Rodgers

In the United States alone, nearly six million people suffer from congestive heart failure (CHF), with approximately 550,000 new cases each year. It is the leading cause of hospitalization for people older than 65, with 25 percent readmitted within 30 days and 50 percent readmitted within six months. Numerous invasive remote monitoring devices and telemonitoring plans have been developed in attempt to prevent rehospitalizations but have mostly been ineffective. With a focus on human-centered design, HeartInSole will achieve what current solutions have not been able to: successfully reduce the rehospitalization rate of CHF patients by increasing their adherence to treatment plans. The device is a customizable and Bluetooth-compatible insole with a complimentary mobile application that continuously tracks fluctuations in a user’s weight and foot size. Models to simulate weight gain and peripheral edema were conducted to determine whether a pressure sensor could be used to obtain accurate and meaningful data. Initial results show that, with a sensor embedded in the heel of the insole, the device can detect changes in weight due to fluid retention and the addition of ankle weight, as well as an increase in foot size due to foot swelling.
SESSION V

Tissue Engineering
Drug Delivery
Disease Models II
Development of a Novel Mouse Model of Progressive Supranuclear Palsy

Aaron Bockmiller, Mina Botros

Progressive Supranuclear Palsy (PSP) is one of the most common forms of atypical Parkinsonism. Yet despite its prevalence, there is no current treatment or therapy directly targeting the aggregation of tau protein in the subcortical regions of the brain associated with sensory-motor coordination known to occur in PSP. This is primarily a consequence of the absence of a testable PSP animal model of the developing tauopathy in the affected brain regions. The aim of this research is to develop an animal model that exhibits tau protein aggregation in the substantia nigra (SN), the brain region commonly affected in PSP, and diminished motor coordination. This is accomplished by stereotaxic injection of recombinant adeno-associated virus (AAV) with controlled expression of mutant tau protein. The AAV vector contains a Cre enzyme promoter such that gene expression is contained within the SN when the AAV is injected into a transgenic mouse line expressing Cre recombinase in tyrosine hydroxylase (TH)-positive dopaminergic cells, which are found predominantly in the SN. Behavioral testing reveals that the mice injected with the mutated tau AAV are outperformed by their control counterparts in several tests of motor coordination and balance. Immunohistochemical analysis indicates that tau expression is found primarily in the SN upon injection. Ultimately it can be concluded that a cell type-specific model of PSP-like tauopathy can be established through stereotaxic AAV injection.
Examining Muscle-Bone Crosstalk: Design of Muscle Trauma Model for Study of Stem Cell Recruitment in Injury Repair

Jaclyn Grode, Kathryn Hardin, Blake Oberfeld

Skeletal regeneration is dependent on the recruitment of mesenchymal stem cells (MSCs) from the periosteum, marrow, and skeletal muscle. However, it remains unclear whether stem cells originating from different tissues represent a “universal MSC” or whether MSC populations are distinct to specific tissue and differentiation factors. Clarifying the contribution of muscle-derived MSCs to skeletal regeneration relies on the standardization of injury. We designed a device that injures the mouse quadriceps with a blunt impact that rapidly crushes the underlying muscle fibers and connective tissue without fracturing bone or breaking the skin. Although other contusion devices have been developed, these studies typically involve rats, are not standardized, and produce injuries of only a single severity. More so, these devices lack thorough consideration of how the physical parameters of the device affect the severity of the injury. In response, we developed a finite element model of the contact mechanics between device and mouse limb, quantitatively describing the expected range and severity of the muscle contusion. The reproducibility of the injury caused by the device was validated by assessing impact force and the histological appearance of trauma. The device was then used in conjunction with a transgenic mouse model to study stem cell recruitment during injury repair. This work will contribute a foundation for systematic study of the crosstalk between bone and muscle not only in the context of healing, but also in the context of pathologies of repair.
Design and Implementation of an Automated Bioreactor System to Conduct Long Term Experiments on Airway Reactivity

Daniel Brewster, Suzanne Stasiak

Asthma is a chronic inflammatory disease of the lung characterized by excessive airway constriction when exposed to agonists such as allergens. This excessive contraction of an airway is known as airway hyperresponsiveness. An increasing number of people are afflicted by this disease, currently with 25 million sufferers nationwide. Little is known about asthma development in a healthy airway, and current medications only temporarily relieve symptoms. Scientists use precision cut lung slices embedded in gels or airway cells cultured in microfluidic devices (airway-on-a-chip) to better understand physiological and mechanical changes in airway cells over time. However, these methods remove cell-matrix interactions and physiological pressure waveforms. Thus, we proposed maintaining viable tissue under physiological conditions in a custom bioreactor system. This allows us to control many environmental factors, such as pressure and temperature while studying disease pathogenesis. We have been able to maintain excised bovine airways in this bioreactor system for two days. An ultrasound transducer allows us to monitor changes in airway diameter when challenged with transmural pressure or an agonist. Our research has shown a $10^{-5}$ M dose of acetylcholine is expected to constrict an airway by 30%, and was used as a marker of airway viability. Research has been shown that asthmatic airways can be generated in as little as two days and therefore we have achieved viability over a period of time relevant for future asthma research.
Engineering Nanoparticles for Cancer Immunotherapy Application

Melissa Kallander, Kayla Myers, Ashika Patel

Cancer is one of the leading causes of death worldwide. Current treatments such as chemotherapy, radiation and surgery can be unsuccessful and often have harmful side effects. Recently there has been a shift towards research in cancer immunotherapy due to its capability to fight cancer with the body’s own immune cells. This project aims to engineer liposome nanoparticles containing an ovalbumin model antigen to activate B cells against melanoma cells. These nanoparticles are comprised of phosphatidylcholine (PtC), DPPE and an ovalbumin-lipid bioconjugate. Ovalbumin-lipid conjugation was confirmed with thin layer chromatography (TLC). Nanoparticles were measured to be less than 400 nm using dynamic light scattering (DLS). Due to their affinity for PtC, B cells phagocytose these liposomes and internalize the ovalbumin antigen. To assess B cell activation, IgM levels of murine peritoneal cavity washout (PCW) cells were measured after 18, 24 and 36 hours of incubation with the liposome nanoparticles. B16F10-OVA melanoma cells were imaged to qualitatively assess confluency and model inhibition of cancer cell growth after 18 and 42 hours of incubation with activated PCW cells. B16F10-OVA cells were stained with Oil Red O, a lipid stain, to assess cell death by lipid feeding. This project’s findings could contribute to future immunotherapy treatments that replace ovalbumin with a cancer-specific antigen.
At the crux of Synthetic Biology is a desire to re-engineer existing biological circuits for other applications. CRISPR, an RNA-guided DNA-endonuclease system, was only recently developed into a transcriptional regulation tool in 2013, and it has already been readily adopted for genome engineering applications in mammalian cells. This tool involves a single guide RNA (gRNA) strand, which guides a dCas9-bound activation domain to a target sequence (gRNA binding site) upstream of the gene of interest. Even though the addition of many gRNA binding sites upstream of a minimal promoter has been proven to increase gene expression, the rules governing their effect have not been explored. We characterized the expression of this system using four independent variables: the number of gRNA binding sites, the size and content of sequences separating consecutive binding sites, and the size between the last binding site and the minimal promoter. We found that the ideal spacer size is six base pairs, the ideal number of binding sites is three, and an increase in either did not lead to greater expression. We also found that the GC-content of the spacer sequences had no significant impact on expression levels. Finally, we showed that our results were reproducible with a distinct activation domain and with a different guide RNA sequence.
EDUCATION
Massachusetts Institute of Technology
Ph.D. Student, Biological Engineering
Expected May 2022
Boston University College of Engineering
Bachelor of Science in Biomedical Engineering, Concentration in Nanotechnology
G.P.A: 3.98/4.00; Dean’s List (Seven Semesters)

WORK EXPERIENCE
Undergraduate Researcher
Wilson Wong Laboratory, Boston University
January 2016 – Present
Boston, MA
• Determined the rules that govern the design of CRISPR/dCas9-regulated synthetic promoters
• Designed and characterized a library of drug inducible split protein recombinases for implementation in complex logic-gate based genetic circuits
• Demonstrated the efficiency of using CRISPR-based activation in genetic circuits by decoupling mRNA contextual interference from target gene expression

CIDAR Laboratory, Boston University
October 2014 – December 2015
Boston, MA
• Built a fusion protein library with multiple linker sequences using protein engineering principles
• Developed a comprehensive assay to characterize the fusion protein library using flow cytometry
• Characterized common error modes of ‘classic’ synthetic biology devices like the Toggle Switch and the Oscillator

Research Assistant and Team Boston University Member
International Genetic Engineering Machine (iGEM) Competition
May 2014 – October 2014
Boston, MA
• Worked in a team to create a characterization workflow for predictive design of complex genetic devices
• Developed a novel design-build-test engineering approach by implementing existing computational tools
• Designed a website for the project (http://2014.igem.org/Team:BostonU)

Teaching Assistant
Engineering Computation, Boston University College of Engineering
August 2014 – Present
Boston, MA
• Presented MATLAB programming concepts to about 20 students in weekly small-group discussion sections
• Participated in weekly meetings with the Professor about making the course better
• Worked on a one-on-one basis with students to help them improve their exam and quiz scores

LEADERSHIP EXPERIENCE
Resident Assistant, Boston University
June 2015 – Present
Student Advisor, ENG Freshman Advising Seminar
August 2015 – Present
Finance Chair, BU Residence Hall Association
April 2016 – Present
Corporate Relations Director, BU Society of Asian Scientists and Engineers
April 2016 – Present
Lead Engineering Ambassador, BU College of Engineering
January 2014 – Present

ACADEMIC ACHIEVEMENTS
Student Research Award, Undergraduate Research Opportunities Program
Summer 2016
Tau Beta Pi (Corresponding Secretary) – National Engineering Honor Society
Induction: December 2015
Alpha Eta Mu Beta - National Biomedical Engineering Honor Society
Induction: October 2015
Distinguished Summer Research Fellowship, Boston University College of Engineering
Summer 2015
Gold Medal, iGEM Giant Jamboree 2014
October 2014
Summer Term Alumni Research Scholars Funding
April 2014

PUBLICATIONS, TALKS & POSTERS

Haddock, TL, Densmore DM, Appleton E, Carr SB, Iverson S, Agarwal Y et al. “BBF RFC 94: Type IIS Assembly for Bacterial Transcriptional Units: A Standardized Assembly Method for Building Bacterial Transcriptional Units Using the Type IIS Restriction Enzymes Bsai and BbsI”. BBF RFC 94. August 2015. (http://hdl.handle.net/1721.1/98267)

Objective

Innovative and result orientated with a strong educational background in biomedical engineering with practical and hands-on experience in the medical field. Keen on learning and contributing to company success whilst working with their core values.

EDUCATION

BS in Biomedical Engineering
Boston University, Massachusetts, USA
Projects:
• Designing and prototyping adjustable prosthetic sockets for pediatric patients
• Designing and prototyping solutions for storing EpiPen in various conditions
• Designing a minimally invasive tool to treat blood clots in peripheral vessels

EMPLOYMENT

Smith and Nephew Endoscopy, Mansfield, USA
Quality Engineer Intern
May-August 2016
Lead a team to pilot Statistical Process Control throughout the Mansfield production facility.
• Lead a multidisciplinary team to establish requirements and the measures to be taken in order meet those requirements to implement Statistical Process Control (SPC) in the Mansfield Manufacturing facility
• Wrote and prepared facility-wide documents (such as Standard Operating Procedure (SOP), Process Summary, Validation Protocols, etc.) for Statistical Process Control in order to harmonize the usage and application of Statistical Process Control in manufacturing facility.
• Conducted facility-wide Measurement System Analysis (MSA) studies to determine areas of manufacturing that could be run more efficiently by using Statistical Process Control (SPC).
• Performed Validations using SPC software on manufacturing equipment in order to monitor production and establish key metrics.

Smith and Nephew Endoscopy, Mansfield, USA
Quality Engineer Intern
June-August 2015
Provided assistance with daily Quality requirements and objectives
• Lead a multidisciplinary team to meet and exceed Quality requirements set by the FDA and international equivalents
• Conducted company wide research and analyzed the data gathered in order to ensure production processes are within the FDA and international regulations
• Facilitated manufacturing to ensure Quality standards are met throughout the process
• Responsible for leading a project allowing for a better Quality Control System in the company

Brondesbury Cricket, Tennis, and Squash Club, London, Great Britain
Assistant Coach
June – August 2013
Responsible for working closely with the coach to perform his duties effectively and in a timely manner
• Acted as a liaison between players and the coach to establish effective communication to improve player performance
• Maintained and evaluated the performance of ten players and provided appropriate feedback to ensure player progress

Mikh Parch Iran Co. Tehran, Iran
Managements Assistant
June – July 2012
Provided administrative support to management
• Prepared weekly Business activity statement to be discussed in board meetings, ensuring a healthy financial standing
• Enhanced management productivity by organizing weekly meetings where accomplishments, improvements and problems were discussed.

TECHNICAL PROFICIENCY

Software Expertise:
• Office suite, MATLAB, MINITAB, Statistical Process Control (SPC)
Noura AlZayed

1365 Boylston Street • Boston, MA 02215
(857) 600-9221 • nalzayed@bu.edu

Education

Boston University December 2017
Candidate for Bachelor of Science in Biomedical Engineering.

Courses:
- Computational Systems Biology of Human Disease
- Computer Science
- Microeconomics
- The Ethical Imagination Writing Research & Seminar
- Electric Circuits
- Transport Phenomena
- The Business of Technology Innovation
- Introduction to Logic Design
- Signals & Control Systems in Biomedical Engineering

Activities:
- Boston University’s International Affairs Association
- Model United Nations International Criminal Court Executive
- Boston University’s Debate Society

AlBayan Bilingual High School 2009 – 2013, Kuwait
Graduated with Honors.

Activities:
- Model United Nations
- Debate Club
- Environmental Committee
- Academic Games

Honors:
- High Honor Roll with Distinction
- Best Achievements Awards in all of Chemistry, Social Studies, Political Science & Math

Experience

- Chosen as intern leader
- In charge of a project surrounding research and implementation of a security venture that was the first of its kind in Kuwait

Model United Nations, Main Executive Board Member 2010 - 2015
- Various executive positions held throughout (executive, chair, leader, etc.)
- Received various distinguished recognitions at every single conference attended (20+)
- Leading organizer for the Pearl Model United Nations conference, the biggest of its kind in Kuwait

Dow Chemical Company, Chosen as Nationwide Student Representative 2011
- Received national press coverage

Community Service 2009 - Present
- Volunteered to help out with the living conditions of refugees in embassies all around Kuwait
- “Buddy” at the Kuwait Little League Challengers Division
  - Awards include ‘Buddy of the Month’ and ‘Most Volunteer Hours’
- Volunteer member at the Al-Kharafi Activity Kids Center for kids with disabilities

Convergent, INC. 2015
- Worked on a team that helped model/develop an in-mouth illuminator for the company

iPhone-Based Instrument for Monitoring Blood Alcohol 2016-2017
- Currently working with a team to design and build the model

Background & Skills

Fluent in both English & Arabic

Computer:
- Java, MATLAB, Verilog, CAD, Microsoft Word, Microsoft PowerPoint, Microsoft Excel, Adobe, iMovie

Lab & Technical Experience:
- includes working with microscopy, sound equipment, oscilloscopes, function generators, DAQs, FPGAs, & multiple types of spectroscopy & circuits
Moustafa Amin

1 Leighton Street (617) 637-6133       mostafa.m.amin@gmail.com
Cambridge, MA – 02141
https://www.linkedin.com/in/moustafaamin

EDUCATION

Boston University College of Engineering, Boston, MA
BS in Biomedical Engineering, expected May 2017
Concentration: Technology Innovation

Projects:
• Designed and built a prototype for a paper-based pneumonia diagnostic device for low-resource settings.
• Designed an innovative shoulder immobilizer to improve patient recovery time post rotator-cuff surgery.
• Built a Machine Learning algorithm to identify objects in images.

EXPERIENCE

Pison Technology
Business Manager, February 2017 - current
• Developing a Go to Market Strategy
• Identifying Product Market Fit and target market
• Building a team to run Clinical Trials
• Leading all healthcare sector related operations including forming new partnerships

Elaj Medical Services Company
U.S Business Development Director, August 2015 – April 2017
• Structuring and forming strategic alliances to bring new healthcare related technologies to the Middle East market.
• Working directly with upper management and the CEO to form long-term corporate strategies and raise a $200m M&A fund.
• Business plan & market entry strategy development.
• Identifying U.S biotech/healthcare investment opportunities.
• Notable Started Relations: Exact Sciences, T2Biosystems, Enlitic, Sample6, LabCloud, AMOHS

Boston Microfluidics Inc.
Product Development and Commercialization Advisor, March 2016 – March 2017
• Identifying correct strategy for product launch
• Pricing of product launch in Middle East.
• Working with CEO and VP of business development to ensure product launches on time
• Advising on future products to pursue based on the international community’s market needs

Delta Integrated Medical Company
Technical and Business Development Director, August 2013 – May 2015
• Responsible for acquiring new products and creating a diversified portfolio of medical devices.
• Working closely with the chief executive officer to develop and update the current business plan.

Elaj Medical Services Company
Corporate Intern, Summer 2015
• Worked with high management on preparing for a private placement transaction on one of their largest subsidiaries (Al-Borg Labs)
• Worked directly with the CEO on company structure and strategy.
• Worked with Business Development Officer to develop a plan to expand and create new partnerships with U.S-based Corporations
• Developed and outlined a step-by-step plan to introduce new healthcare-related technologies to the Middle-East Market.

Saudi Health Investment Company
Corporate Intern, Summer 2014
• Worked directly with the CEO on investment strategy.
• Worked with other team members to evaluate investment opportunities and performing due diligence studies.

Al-Borg Medical Laboratories
Lab Intern, Summer 2013.
• Worked in the molecular biology lab – PCR/Assisted in calibration and maintenance processes of lab equipment

SKILLS
• Business Model Structuring
• Product Development
• Excellent command and proficient use MATLAB - working proficiency CAD.
• Excellent command and proficient use of Microsoft Office.
• Fluent English and Arabic. Limited working proficiency Spanish
• Team Activity:
  o Boston University Entrepreneurship Club
  o Health Innovators – Boston Biotech
Jennifer M. Asaro  
10960 Sunset Ridge Drive, San Diego, CA 92131  
(858) 880-5192 | jenni.asaro@gmail.com | https://www.linkedin.com/in/jennifer-asaro

EDUCATION

Boston University College of Engineering  
Bachelors of Science, Biomedical Engineering  
Boston, MA  
Expected May 2017


EXPERIENCE

Smolina Lab, Boston University Biomedical Engineering Department
Research Assistant, September 2016 – Present
— Primary focus on development of novel molecular analysis concepts for research and diagnostics
— Performed PCR, qPCR, and subsequent analyses of DNA amplification products

Boston University Residence Life
Office Assistant, September 2014 – Present
— Assisted the Administrative Secretary in office- and resident-related tasks and maintenance of quality of student life; solved room-related issues, conflict resolution
— Managed office when superiors were out

PROJECTS

Advanced Multiplex qPCR for Rapid Pathogen Identification
— Examined results of PCR experiments, using primers optimized for desired results
— In the future, will utilize modified primers to perform quantitative PCR and melt-curve analysis
— Working toward the ultimate goal of a label-free method for simultaneous detection of multiple bacteria

CardiAct
— Facilitated hypothetical design and development for a medical device to improve treatment of cardiac arrhythmias
— Analyzed product specifications, including size, hazards, FMEA analysis, as well as required FDA regulatory pathways and patenting processes

SKILLS

Computer: MATLAB, ImageJ, Mathcad15, Verilog, Microsoft Office Suite
Lab: Pipetting, PCR, qPCR, Gel Electrophoresis, Melt Curve Analysis, DNA Purification, Oscilloscopes, IR Spectroscopy

LEADERSHIP

Theta Tau Professional Engineering Fraternity  
March 2014 – Present
— Founding member
— Volunteer work with the College of Engineering, local schools and organizations

Risk Management Chair, September 2015 – December 2016
Assessed potential events, assuring they comply with fraternity and University policies, local laws
Judicial Board Member, September 2016 – December 2016
Worked with others to determine repercussions associated with any members breaking rules
JOSEF ATMAZ AL-SIBAIE
33 Harry Agganis Way, Boston, MA 02215. +1-857-242-8370. josef017@bu.edu

EDUCATION

BOSTON UNIVERSITY
Bachelor of Science, Biomedical Engineering
- Academics: 3.92 GPA – Medical Device Design, Engineering Economy, MATLAB, Technology Commercialization
- Honors: Summa Cum Laude, Tau Beta Pi, Presidential Scholar (5% of student body), Dean’s List (all semesters), Leadership: Executive Board for BU Consulting Group, Executive Board for Technology & Entrepreneurship Club
- Teamwork: Neonatal Vitals Monitor Project, Alpha Kappa Psi Case Competition, Intramural Soccer

UNIVERSITY OF CAMBRIDGE
Pembroke-King’s Programme
- Academics: A in International Law, A in Good Life or Moral Life, A in Creativity and Business Innovation

EXPERIENCE

THE BOSTON CONSULTING GROUP
Visiting Associate
- Performed IP analysis using BCG tools to identify potential innovation and growth regions for specialty glass manufacturer
- Evaluated adjacency analysis of external patent citations to recommend three industries for patent portfolio expansion
- Directed remote analytics team in selecting daily tasks, organizing internal deadlines and devising next steps
- Selected acquisition targets and prepared approach strategies for heavy industries subsidiary of major Japanese conglomerate
- Prepared 8 deep-dives of companies of interest and presented these to client project team in weekly jour fixe meetings
- Conducted interviews with former employees of acquisition targets to gain primary insights and verify secondary findings
- Received return offer and was inducted into Fast Forward scholarship program of BCG Germany and Austria

PRICEWATERHOUSECOOPERS
Intern – Deals Strategy
- Advised client on the strategic decisions regarding the development of 4 real estate projects distributed across Kuwait
- Created and analyzed physical infrastructure and social demographic databases of client’s project sites using Excel
- Traveled to Kuwait with project manager to verify secondary research on client sites through interviews and observations
- Carried responsibility of designing map slides and drafted two recommendations for each client site on final report

MASSACHUSETTS GENERAL HOSPITAL
Research Associate
- Applied time-driven activity-based costing to develop process improvement strategy for Intervention Radiology Department
- Recorded duration of port placement procedures to identify inefficiencies that would allow for potential process optimization
- Submitted raw and analyzed data to research supervisor who drafted abstract for Radiological Society of North America 2015

MAX PLANCK INSTITUTE FOR CHEMICAL ECOLOGY
Research Assistant - Biochemistry
- Analyzed weevil-gut genes to determine known and effective methods of combatting this pest in European forests
- Conducted laboratory techniques and computer sequencing simulations to learn about weevil’s resistance to pesticides

ACTIVITIES

STRATEGYBU
Founder and Project Leader
- Direct two teams of 6 students each that provide strategic recommendations to small businesses and BU startups
- Successful projects include: introduction of a new flavored water beverage, distribution strategy for reusable shopping bags
- Devised bi-annual case competition with weekly workshops as a recruiting pipeline to sort new students into project teams
- Established relationship with retired consultant and partnership with BU Venture Accelerator to create supply of projects
- Planned BU’s Annual Consulting Conference 2017 and moderated speaker panel of alumni consultants on exit opportunities

WORLD BLACK BELT CENTER
Instructor and First Dan Black Belt in Tang Soo Do
- Taught two weekly classes for beginners and intermediates including testing requirements, self-defense and conditioning

TRANSATLANTIC CASE COMPETITION
Winner
- Developed and presented market entry strategy for business psychology consulting client into private equity industry
- Collaborated with transnational team from Boston University and Newcastle University on written proposal and presentation.
Beatrice M. Baumberger Altirriba
bea.baumberger@gmail.com - 305-215-5718

EDUCATION

Boston University, Boston, MA (Anticipated May 2017)
• Bachelors in Biomedical Engineering
• Concentration in Business Technology Innovation
• Selected to the Patriot League Academic Honor Roll

SKILLS

• Language Skills: Fluent and proficient in English, German, Spanish and Catalan
• Computer Skills: MS Office (Word, Excel, PowerPoint), MATLAB, Photoshop
• Leadership Skills: Bloom Family Leadership Academy (Leadership program that helps athletes achieve better leadership skills)

RESEARCH/PROJECTS

• Maturität Arbeit 2012 – Antioxidants of the Grape: Two year research project centered on the role of the antioxidants of the grape, especially of its seeds. This paper was supported by thorough professional investigation and scientific experimentation
• Comparative biomechanical study of the surgical reconstruction of the scapholunate ligament: Center for Advanced Orthopedics at the Beth Israel Deaconess Medical Center
• Device Diagnostics and Design: Optimization and simplification of current neonatal vitals monitoring
• Business Technology Innovation Independent Study: Under the guidance of Professor Winer, founder of Winer Capital Management LLC, applying theoretical knowledge to start up a business in the field of innovative engineering

ACTIVITIES

Boston University Field Hockey 2013-Present
• Member of the Division I Field Hockey Team (Patriot League Conference)
• One of four MVP’s in the Patriot League Championship
• Devote 25+ hours per week to practice, training, competition and travel while maintaining a full academic course load

Spanish Regional and National Field Hockey
• Member of the U-16 Spanish National and Catalan Regional Field Hockey Team (2010 - 2012)

Public Markets Investing Group (PMIG)
• Former member of the E-board of a finance and investment organization at Boston University

Student Athlete Advisory Committee (SAAC) at Boston University
• Member of nation-wide student-athlete organization aimed at giving student-athletes a voice in different subjects and an opportunity to provide their insight on their experience that also provides leadership and community service opportunities

COMMUNITY SERVICE

Cotolengo (2010, Barcelona, Spain)
• Volunteered to help take care of mentally disabled children

Athletes for Autism (2013-2015, Boston, MA)
• Assisted in a program that encouraged autistic children to become active and interact with other children in their same situation

Nursing Home (2012, Barcelona, Spain)
• Helped take care of elderly people in a nursing home in Barcelona
SHAHD BAWARITH
854 Beacon Street, Boston, MA 02215 ♦ bawarith@bu.edu ♦ (571) 551-1263 ♦ https://www.linkedin.com/in/shahdbawarith

EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering

WORK EXPERIENCE

Bioventus LLC, Boston, MA
Researcher – Department of Surgery
• Decreasing residence time of granules by 50% for effective healing of fractured bone through orthobiologics

Massachusetts General Hospital (MGH)/ Harvard University, Boston, MA
Research Assistant – Center for Systems Biology
• Designed and tested the mechanical/electrical components of a fully passive weight monitoring system

Boston University College of Engineering, Boston, MA
Research Intern – Binaural Hearing Laboratory
• Formulated algorithmic methods for testing the Cocktail Party Effect on patients with hearing disabilities

King Abdullah University of Science & Technology, Thuwal, KSA
Research Intern – Advanced Membrane and Porous Materials Center
• Developed a Pebax membrane with low flux and high filtration of permeate for water desalination use

PROJECTS

Senior Design, 3D Bioprinting for Tumor Engineering, Brigham and Women’s Hospital
• Developing a 3D bioprinted melanoma model to observe and test cancer metastasis in a group researchers

Seizure Detection and Monitoring Device
• Creating a seizure detection and monitoring device for low-resource Sub-Saharan Africa to combat epilepsy

Catheter-Shunt System
• Designing a catheter-shunt system to shunt excessive cerebrospinal fluid to decrease intracranial pressure

Load Machine, Gillette
• Manufacturing a cyclic load machine for Gillette to test their newly developed aluminum alloy razor blades

SKILLS

Research: 3D Bioprinting/Printing, Tissue Culture, Statistical Analysis, FTIR/ATR, Oscilloscopes/Function Generators
Computer: Microsoft Office, MATLAB
Languages: Fluent in Arabic and French

LEADERSHIP & AWARDS

Recipient – KAUST Gifted Student Program (KGSP) Scholarship
• A prestigious scholarship awarded by the King Abdullah University of Science & Technology (KAUST)

Board Member, Class Gift Committee, BU
• Serve as a leader to encourage philanthropy and create events for the senior class at BU

President and Founder, National Engineering Mentors Organization, BU
• Organize a mentoring program that pairs upperclassmen with underclassmen based on major, skills, and personality

Coder, Natakallam, BU
• Code a mobile application to promote refugees to teach the Arabic language overseas
Connor Beck

CONTACT (610) 554-8875 469 Columbia Ave.
INFORMATION cbeck29@bu.edu Palmerton, PA 18071

EDUCATION

Boston University
BS, Biomedical Engineering

Universidad Autónoma de Madrid
20 credit Biomedical Engineering study abroad program

ACADEMIC

Presidental Scholar

HONORS

Dean’s List (all semesters)

SELECTED COURSES

Chemistry 1 & 2 Physics 1 & 2 Engineering Mechanics
Electric Circuit Theory Logic Design Biomedical Measurements
Systems Physiology Molecular Cell Biology Electric Circuit Theory
Medical Imaging

PROFESSIONAL EXPERIENCE

Fraunhofer CMI | Brookline, MA
Biotechnology Engineering Assistant

May 2016–present

Worked to develop a rapid, point-of-care diagnostic test for Zika virus in low resource settings. The project centers on manufacturing microfluidic devices to detect Zika through RT-qPCR and loop-mediated isothermal amplification (LAMP).

Boston University Biomedical Engineering Dept. | Boston, MA
Research Assistant

August 2015–April 2016

Experience in Dr. Xue Han’s neural engineering lab includes molecular cloning, tissue culturing, and neuron transfections with the ultimate goal of developing high-affinity recombinant proteins to track calcium activity in excitatory and inhibitory synapses in the brain.

ADDITIONAL EXPERIENCE

Boston University Engineering Undergraduate Office | Boston, MA
Program Assistant

August 2015–present

Provide customer service including answering phones, greeting prospective students, advising current students, as well as other projects assigned by the undergraduate programs director.

Palmerton Swim Team | Palmerton, PA
Swim Team Head Coach

May 2013–August 2015

TECHNICAL AND LAB SKILLS

MATLAB, Verilog, Mathcad, ImageJ, APE, cell culturing (mammalian, neurons), cell transfection, cell transformation, fluorescence imaging, gel electrophoresis, in vitro transcription, molecular cloning, oscilloscopes, PCR, plasmid preparation, recombinant DNA technology, restriction enzyme digests

COMMUNITY INVOLVEMENT

Engineering Ambassador for BU’s College of Engineering

August 2015–present

BU College of Engineering Dean’s Host

August 2015–present

REFERENCES

Xue Han, Ph.D. Assistant Professor
Alexis Sauer-Budge, Ph.D.
Senior Research Scientist
BU College of Engineering Fraunhofer USA
Biomedical Engineering Dept.
Center for Manufacturing Innovation
xuehan@bu.edu asauerbudge@fraunhofer.org
EDUCATION
Boston University College of Engineering
Bachelor of Science in Biomedical Engineering – GPA 3.94
Minor in Chemistry, Graduating Summa Cum Laude

WORK EXPERIENCE
Endoscopy Practice Assistant
Brigham and Women’s Hospital, Endoscopy Dept.
Dec 2016 – Present

- Interface with patients and perform administrative duties for the dept.
- Use electronic medical records system to admit patients, update status, and print upcoming schedules

Medical Assistant
Center for Healing Behavioral Health Treatment
May 2016 – August 2016
Ewing, NJ

- Clinical experience shadowing physicians in client visits and recording notes for EMR
- Created and implemented prescription management system
- Management of medications, appts., and procedures; liaised b/w clients, clinical staff, and physicians
- Various administrative duties in the billing and other departments

Medical Records Assistant
Psychiatric Practice – Laurie Schray M.D.
Winter 2014
New Hope, PA

- Populated record forms from psych notes
- Maintained practice compliance with psychiatric standards

Lifeguarding
Summer 2010 – August 2014

RESEARCH EXPERIENCE
Research Assistant – PSP Mouse Model Study
Ikezu Lab, Dept. of Pharmacology, Boston University Medical School
Sept 2016 - Present

- Development of a novel mouse model to aid Progressive Supranuclear Palsy research and treatment
- Duties include: genotyping, protocol optimization, behavioral testing, sectioning, immunohistochemistry, imaging, and data analysis

SKILLS
- Customer Service experience and ability
- Chemistry and Biology Lab experience
- Previous lifeguard and first aid certifications
- Programming in Matlab, Verilog, and C++
- Office programs experience
- HIPAA compliance trained and experience

LEADERSHIP
Drexel’s Mini-Med School – Summer 2012; Drexel University Hospital program Involved lecture, attending rounds, shadowing doctors, observing surgeries, etc. 35+ hrs/wk for 5 weeks.

Presidential Scholarship and National Scholars Award – Academic-based scholarships from BU
Dean’s List – Fall 2013 through Fall 2016

National Society of Collegiate Scholars (NSCS) – inducted February 2014
Tau Beta Pi, Engineering Honors Society – inducted in Fall 2016

AFFILIATIONS
Global Water Brigades – 2015-present
- Attended global brigades conferences with leadership training in April 2016 and April 2017

Brigham and Women’s Medical Career Exploration Program – Fall 2014-present
- Performed 60+ volunteer hours throughout the hospital w/ patient and staff interaction
- Culminating in placement in the endoscopy center for an additional 80+ hours of specialized volunteering
- Shadowing and hospital rounds at the end of program
Margaret Ann Bolick  
29 Farm Hill Road • Natick, MA • 01760 • 617-833-0276 • mbolick@bu.edu

EDUCATION
Boston University School of Education, Boston, MA  
Master of Arts in Teaching in Secondary Mathematics Education  
*BEST (Bringing Engineers into STEM Teaching)* Noyce Scholar funded by the National Science Foundation  
May 2018

Boston University College of Engineering, Boston, MA  
Bachelor of Science in Biomedical Engineering  
GPA: 3.14/4.00  
May 2017

Relevant Coursework:
Intro to Engineering Computation, Intro to Software Engineering, Intro to Logic Design, Signals and Systems, Control Systems in Biomedical Engineering, Applications in Bioinformatics, Biomedical Instrumentation

RELEVANT SKILLS
MATLAB, Python, C++, XML, Xcode, Android Studios, Microsoft Office, ImageJ

ENGINEERING PROJECTS
Heart Rate Monitor with GSM Capability  
• Constructing an ECG that monitors a person’s heart rate while driving and alerts the proper healthcare professional in the case of an emergency.  
Fall 2016 - Present

3D Adipose Tissue  
• Developing computational algorithms using MATLAB to characterize the growth of lipid droplets from time-lapse images of the tissue.  
Fall 2016 - Present

GPS Based Android Application  
• Created an Android App called “Pahk the Cah” that provides guided tours around Boston, MA.  
Fall 2015

EXPERIENCE
Beginnings School, Boston University School of Medicine  
Clinical Research Assistant  
Weston, MA  
May 2016 – January 2017

• Designed the curriculum handbook for outside teachers, restructured the curriculum handbook for Beginnings teachers, and led the alumni study.

The Rivers Day Camp  
Co-Director of Counselors in Training  
Weston, MA  
Summer 2012 - Summer 2016

• Trained CITs on teamwork, leadership skills, and being positive role models through daily activities and conducting performance reviews.

General Counselor  
• Encouraged a fun, positive, and safe environment, while still participating in activities to convey an idea of sportsmanship and increase overall morale.

LEADERSHIP & COMMUNITY INVOLVEMENT
Kappa Alpha Theta Fraternity  
Boston University (Eta Chi Chapter)  
January 2014 - Present  
Boston, MA

Chief Operating Officer  
• Responsible for communicating with Headquarters to create efficient and safe risk management plans for events ranging from sisterhood to formal.

• Conduct weekly Membership Development Committee meetings with topics ranging from disciplinary hearings of members to positive promotions that recognize all members.

Active Member  
• Attended risk management forums such as Panhellenic Judiciary Symposium and Something of Value.

• Selected to attend the Emerging Leaders Institute (Summer 2015) and Grand Convention (Summer 2016).

Dana Hall School  
Assistant JV Basketball Coach  
Wellesley, MA  

Kukkiwon World TaeKwonDo Headquarters  
First and Second Degree Black Belt  
South Korea  
1998 - Present

101
Mina Booless Botros  
(978) 335-7354 | 31 Joseph Ave. Dracut, MA 01826 | botrosm@bu.edu

EDUCATION

BOSTON UNIVERSITY
Bachelor of Science in Biomedical Engineering
Current GPA: 3.73

- **Exchange:** Spent a semester in Grenoble, France. Studied at Université Joseph Fourier, travelled Europe, and experienced different cultures while learning more about my own.
- **Honors:** Alpha Eta Mu Beta: National Biomedical Engineering Honor Society, AEMB National Award for Outstanding Chapter Officer; Tau Beta Pi: National Engineering Honor Society; 2016 CurePSP International Research Symposium Poster Presentation Award; Dean’s List: Fall 2013, Spring and Fall 2014, Spring and Fall 2015, Fall 2016; Saint Michael’s College Book Award

EXPERIENCE

Undergraduate Researcher | Ikezu Lab | CurePSP URSO Student Fellow
Boston University School of Medicine, Department of Pharmacology & Experimental Therapeutics  
October 2015 – Present

- Spearheading the development of a Progressive Supranuclear Palsy (PSP) mouse model through the injection of mutated tau protein via an AAV vector. Constructed protocols and apparatuses to test motor function deficits and neuropathy in mice.
- Study the impact of maternal immune response in the advent of Autism Spectrum Disorder. Analyzed microglia branching and mouse behavior under various conditions.

Ophthalmic Medical Scribe/Assistant
Burlington Eye Associates P. C.  
May 2013 – Present

- Perform testing on patients to provide the physicians with diagnostic information such as intraocular pressure, visual fields, various forms of visual acuity, fundus photography, OCT and nerve fiber analysis.
- Assist the physician during patient exams as well as surgical and laser procedures, including preparation, instrumentation, and documentation.

Inspiration Ambassador
Technology Innovation Scholars Program  
August 2016 – Present

- Run the Calculus Project, an enrichment program for under-represented minorities and low-income students that aims to close the achievement gap in mathematics. Teach students about LEDs and Smart Lighting through both lecture and an informative, hands-on activity.
- Introduce Josiah Quincy High School students to various aspects of engineering through weekly activities such as coding a UAV to maneuver an obstacle course.

VOLUNTEER

Walk Chair
American Foundation for Suicide Prevention  
September 2016 - Present

- Organizing an Out of the Darkness Campus Walk and fundraising campaign to reduce the prevalence of suicide by increasing awareness and lessening the stigma behind subjects like suicide, depression, and mental health on college campuses.

Piece of Mind Volunteer  
November 2016 - Present

- Teach high school students about neuroanatomy and function through the use of interactive educational tools.

SKILLS

Lab:  
- Stereotaxic Brain Injection, Behavioral Testing, Immunohistochemical Staining & Analysis, Gel Electrophoresis, DNA Extraction, Vector Cloning, Cell Culture

Ophthalmology:  
- Fundus Photography, OCT, HRT, Visual Fields, Pachymetry, Applanation Tonometry, Visual Acuity, Refraction

Computer:  
- MATLAB, ImageJ, NeuronStudio, Solidworks, MestreNova, Microsoft Office Suite, EMR: MDIntelleSys

Language:  
- Fluent Arabic, conversational French, ASIST certified

Organizations & Interests

- Alpha Eta Mu Beta | President
- Tau Beta Pi | Treasurer
- Technology Innovation Scholars Program | Inspiration Ambassador
- Boston University Mental Health Committee
- Engineering Ambassador
- Lacrosse
- Biking
- Snowboarding
- Hiking
- Kayaking
DANIEL BREWSTER

| 1 (978) 505-2931 | Dbrew@bu.edu
120 Davis Rd, Carlisle MA, 01741

SUMMARY

Highly organized engineering student with exceptional medical research experience and a strong dedication to community service through volunteering and Air Force ROTC.

EDUCATION

Boston University Class of 2017

• Senior studying Biomedical Engineering. Pre-med track. 3.2 GPA.

EXPERIENCE

September 2013 – Present
Cadet Wing Vice Commander, Air Force Reserve Officer Training Corps

• Training to commission as 2nd Lieutenant in the United States Air Force. Chosen by cadre for second in command of cadet Wing as a Junior. Maintained discipline standards, oversaw ROTC events, and trained sophomores for Field Training. 100% of trainees received upper half ranking at Field Training. Was awarded ROTC scholarship in college for excellence.

December 2013 – May 2015
Research Assistant, Molecular Aging and Development Laboratory

• Wrote Matlab scripts to automate workflow and enhance compatibility between Mass Spectrometer and Laser Ablation system to map homeostatic balance of chemicals in mouse brains. Rewrote most of laser’s company software to reduce manual labor by six hours per experiment. Quantitatively analyzed colocalization of metals in traumatically injured mice brain. 10hrs/wk during the school year, and 20hrs/wk in the summer.

February 2014 – September 2014
Hospital Volunteer, Brigham and Women’s Hospital

• Volunteered over one-hundred-and-sixty hours at Brigham and Women’s Hospital. Completed Medical Career Exploration Program. Talked with patients, played games, and helped them get around the Hospital. Was given an “Outstanding” rating by the patient floor’s Nurse Manager.

April 2016 – Present
Research Assistant, Respiratory and Physiological Identification Laboratory

• One of two undergrads chosen to work for Dean of Engineering at Boston University. Research focused on studying asthma pathology. Designed and built a temperature, pH, and pressure controlled bioreactor capable of keeping dissected airways alive for several days. Project allowed for long term experiments on how airways develop hyper-reactivity. Worked 40hrs/wk during summer, and 20hrs/wk during school year.
Rachael Campion  
557 Columbus Ave, Boston MA  
(612) 978-8077 • rcampion@bu.edu

EDUCATION

**Boston University College of Engineering**  
Bachelor of Science in Biomedical Engineering concentrating in Technology Innovation.  
May 2017

**Université Joseph Fourier Grenoble**  
Studied abroad at the university, earning 16 engineering credits.  
May 2015  
Grenoble, France

**Related Courses:**  

WORK EXPERIENCE

**Boston Scientific Corporation**  
*Research and Development Engineer*  
Marlborough, MA  
July 2017

- Rotational program involving rotations in a variety of R&D specialties and departments  
May – August 2016

**Global Operations Strategy Intern**  
Marlborough, MA  
May – August 2016

- Created an analytical toolset for developing future Distribution Network Optimization Strategies  
- Performed Distribution Network Optimization for BSC’s current network  
- Quantified both financial and strategic benefits of a new international Distribution Center  
- Created a New Product Development timeline in order to develop a future technology strategy

**Intersect Partners LLC**  
*Engineering Intern*  
Minneapolis, MN  
May – August 2014

- Conducted prototyping procedures using SolidWorks  
- Performed verification and validation procedures  
- Researched FDA approval and patents for new products  
- Created a business plan for a new product now on market

LEADERSHIP

**Deans Host:**  
*Student Ambassador*  
January 2014 – Present

- Represented the College of Engineering at formal events including Open Houses and Alumni events.  
- Conducted campus tours for groups of up to 20 perspective students.

**Brigham Women’s Medical Career Exploration Program:**  
*Patient Liaison*  
January 2014 - 2015

- Volunteered at Brigham Women’s Hospital in their MCE program for 280 hours which incorporated patient and staff interaction.  
- Completed 160 hours on a specialty floor and rounded with a physician.

SKILLS

- **Computer:** Matlab, SolidWorks, SQL, Microsoft Office  
- **Languages:** Conversant in Spanish and French  
- **Other:** V&V procedures, Machining, Circuit Design, Patent research
Erin Y. Chang  
570 Jefferson Drive, Palo Alto, CA 94303  
Phone: 650-521-2000  
Email: echang17@bu.edu  
LinkedIn: www.linkedin.com/in/erin-chang-a1487683

Education  
Boston University College of Engineering  
Bachelor of Science in Biomedical Engineering

Projects  
Smart-Fit Cap  
• Designed and built a wearable cap to improve the fit of football helmets for youth and high school football players in order to reduce the incidence of concussions while the brain is still developing.

Visually-Guided Hearing Aid  
• Created a working concept for a hearing aid to mimic the cocktail party effect in individuals with hearing loss.

Rett Syndrome Hand Monitor  
• Developed wearable hand monitor for Boston Children’s Hospital to study effect of medication on the hand stereotypies of children with Rett Syndrome.

Experience  
Envestnet | Yodlee (Financial Software company)  
• Productized credit card account-organizing and goal-saving applications for financial management.
• Conducted UX research to develop applications in the prototype stages and refine content and features.
• Conducted market research to create competitive landscapes and compile data for upcoming projects.

Undergraduate Research in Nanomedicine and Medical Acoustics Laboratory  
• Developed lipid-polymer hybrid and calcium phosphate nanoparticles for delivering cancer therapeutics.
• Remodeled protocol to reduce particle size for better particle stability when loaded with therapy drugs.
• Senior Design Project: using above nanoparticles for combination drug delivery to breast cancer cells.

Summer Term Alumni Research Scholars (STARS Program)  
• Studied bending properties of soft, silicone materials in response to fluid contact.
• Designed experiments to measure the shape changes of hollow-beam samples injected with fluid.
• Data collected will be used in an academic paper and to further experiments attempting to induce 3D shape change from a 2D structure (“swelling-induced origami”).

Xignite, Inc. (Market Data Cloud company)  
• Encouraged more timely payment by making collection calls to customers.
• Sorted all active clients using SalesForce and Box.com to find missing contracts needed to be recovered.
• Managed customer entitlements to ensure correct market prices were shown for respective subscriptions.

Leadership  
Boston University Women’s Club Soccer  
• eBoard President (6 seasons) and Team Captain (4 seasons).
• Established official affiliation with the Club Sports Department.
• Scheduled all games, coordinated volunteering events, helped organize practices, team management.

Undergraduate Public Health Association  
• eBoard Secretary (1 year), member (2 years).
• Sent weekly emails and helped organize club events.

Honors and Awards  
AP Scholar with Honor  
President’s Volunteer Service Award  
Dean’s List at Boston University

Other Activities and Interests  
• Member of Society of Women Engineers.
• Programming languages: MATLAB, Python, HTML, C++.
• Nike Apparel Tester, Animal Shelter Volunteer, Developing Photographer, and Winter Sport Enthusiast.

References available upon request.
EDUCATION
Boston University College of Engineering | Boston, MA
Bachelor of Science in Biomedical Engineering with Technology Innovation Concentration
May 2017

PROJECTS
Boston University Senior Design Project
Novartis Institutes for BioMedical Research (NIBR) | Boston, MA
Aug. 2016 – Present
Design and prototype a FDA Class II health tracking device to effectively prevent unplanned hospital readmissions, reduce financial burden, and improve overall care for congestive heart failure (CHF) patients.
Identify methods to achieve patient adherence and potential opportunities for intervention by interviewing and surveying behavioral psychiatrists, CHF patient communities, and cardiac care non-profit organizations.
Presented at the 43rd Annual Northeast Bioengineering Conference (NEBEC).

Eye Movement Code Decipher
Boston University College of Engineering | Boston, MA
Sep. – Dec. 2015
Designed a device that tracks electrooculogram signals (EOG) with LabVIEW Virtual Instrument and deciphers horizontal eyeball movements that correspond to a predefined alphabet code with MATLAB.
Conducted 40 tests and achieved a success rate of 82.5%.

WORK & RESEARCH EXPERIENCE
Boston University
Research Intern for Professor Jason Ritt | Boston, MA
May – Aug. 2016
Conducted daily animal behavioral training, testing, and recording that included advanced-level animal handling and training chamber maintenance while ensuring consistency and precision.
Adapted 40 high speed videos of animal trials to quantifiable measurements using MATLAB on a daily basis.

ChatrHealth
Startup Intern | San Francisco, CA
May – Aug. 2015
Analyzed and identified potential target customers by referencing hospital-acquired conditions (HAC) scores.
Introduced methods that drive quality care and reduce medical errors by incorporating Medicare reimbursement policies, Patient Safety Indicators (PSIs), and HAC reduction checklists into modules.

National Health Research Institutes (NHRI)
Research Intern | Hsinchu, Taiwan
Jul. – Aug. 2014
Cultured 120 embryos of HBx(p53-)-transgenic zebra fish and analyzed their liver size development by examining the fluorescence of the HBx-mCherry fusion protein.
Discovered that a decreasing liver size correlates to a significantly higher mortality rate in HBx(p53-)-transgenic zebra fish compared to that of GFP-mC controlled zebra fish.
Presented findings of 75% decrease of cell proliferation in zebra fish embryos and other statistical implications to laboratory team comprised of faculty administrators, graduate students, and fellow interns.

LEADERSHIP
BU Taiwanese American Student Association (BUTASA)
President | Boston, MA
Sep. 2014 – May 2016
Increased membership by 12% and awareness of the Taiwanese American identity by introducing and establishing a need-based mentorship program for the executive board of 16 and interested active members.
Oversaw all financial, logistical, social, legal, and cultural aspects of BUTASA and spearheaded 20+ events with a $7,000+ budget, achieving 1,000+ student outreach.
Represented BUTASA on and off campus while maintaining relations with 10+ cultural organizations, six Taiwanese associations in the Greater Boston area, and 20+ professional organizations and sponsors, to increase collaborative opportunities.

TEDxBU
Sponsorship Chair | Boston, MA
Nov. 2014 – Aug. 2015
Represented TEDxBU in the Greater Boston area while maintaining communications and correspondences with 250+ targeted sponsors, which included local businesses, franchises, and restaurants.
Directed the recruitment process of all in-kind contributions and monetary sponsorships with $5,000 USD as the predetermined financial goal by categorizing potential sponsors into three tiers with different levels of benefits and publicity, as well as pitching in-person contract proposals to business owners.

SKILLS & ACTIVITIES
Language: English (native) and Mandarin Chinese (native).
Activities: Alpha Phi Omega: Zeta Upsilon Chapter (Brother), Global Leadership Organization: Creative Marketing (Committee Officer), Co-Rec 5-on-5 Intramural Basketball (Team Captain).
EDUCATION

Boston University College of Engineering  
Bachelor of Science in Biomedical Engineering  
Minor in Mechanical Engineering; GPA: 3.58/4.00; Dean’s List (Five Semesters)

Universidad Autónoma de Madrid & Instituto Internacional en España  
Boston University Engineering Study Abroad Program  
Madrid, Spain

Related Coursework: Device & Diagnostics Design; Product Design & Innovation in BME; Invention: Technology Creation, Protection, and Commercialization; Mechanics of Materials; Systems Physiology; Organic Chemistry; Fluid Mechanics;

EXPERIENCE

BU Klapperich Laboratory for Diagnostics and Global Healthcare Technologies  
Undergraduate Research Assistant  
Sept. 2015—Present  
Boston, MA

- Utilized CAD, cutter plotters, and hot presses to design and create microfluidic chips for diagnosing Chlamydia and Gonorrhea
- Designed a protocol and built an apparatus to test microfluidic chips after fabrication to ensure that only high-quality chips are used in experiments with NG cells and clinical samples
- Senior Design Project: Developing flexible paper microfluidic electrodes

Micro-Leads, Inc.  
Biomedical/Mechanical Engineering Intern  
Boston, MA

- Designed various products using SolidWorks and AutoCAD
- Manufactured microscale nerve cuffs and conformal electrodes using precision micro-molding, micro-welding, and micro-soldering of silicone for testing and clients
- Aided in the innovation of a process to assemble hermetic packages on an interdisciplinary team

Knight Engineers & Architects  
Civil Engineering Intern  
June 2015—Aug. 2015  
Chicago, IL

- Collaborated with teams of engineers to complete the preliminary stages of long-term and short-term civil engineering projects utilizing Bentley MicroStation and GEOPAK for quality control purposes

BU Xue Han Optogenetics Laboratory  
Undergraduate Research Assistant  
Boston, MA

- Prepared brain implants used to monitor brain activity for optogenetic research
- Maintained and improved the existing and new prototype of mouse behavior observation chambers

ENGINEERING PROJECTS

Flexible Paper Microfluidic Electrodes (Senior Design in the Klapperich Laboratory)  
Fall 2016—Present

- Developing a system to print electrodes that use DNA hybridization techniques for diagnostic purposes

Hemorrhage Prevention/Reduction during Emergency Transport (Device & Diagnostics Design)  
Fall 2016

- Produced a hands-free device that reduces external bleeding from extremities during emergency transport
- Created multiple user-centered and inspired looks-like and works-like prototypes

Stimulator to Relieve Migraine Symptoms (Product Design & Innovation in BME)  
Fall 2016

- Designed a virtual medical device to provide noninvasive and nonpharmacological chronic migraine relief
- Introduced to: Verification & Validation, Intellectual Property, FMEA, and Regulatory Pathways

EOG Cursor & Keyboard (Biomedical Measurements)  
Fall 2015

- Created a system utilizing an electrooculogram, measuring the potential between the front and back of the eye, to move a computer cursor, click, and type using a GUI of a keyboard

SKILLS

Software: AutoCAD, SolidWorks, MATLAB, ImageJ, LTspice IV, LabScribe, Microsoft Office, Bentley: MicroStation & GEOPAK Suite

Laboratory: Gel Electrophoresis, PCR, Chromatography, Spectroscopy: NMR & IR

Others/Machine: Soldering, Spot-Welding, 3D-Printing, Silicone Molding & Dipping, Nerve Cuff Assembly, Microscopy, EOG, EKG, Ultrasound, Ferrule Assembly: Metal & Ceramic, Fiber Optic Cable Stripping & Polishing

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

College of Engineering EK100 Freshmen Student Advisor at BU; Student Advisor (Aug. 2016—Present)

Society of Asian Scientists and Engineers (SASE) at BU; Treasurer (April 2016—Present), PR Director (2015—2016)

Alpha Eta Mu Beta (AEMB) National Biomedical Engineering Honor Society at BU; Vice President (April 2016—Present)
Bryan Chiakpo  
14 Ashford Street, Apt. 4 • Boston, MA 02134 • 315-237-1316 • bchiakpo@bu.edu • https://www.linkedin.com/in/bryan-chiakpo-76a42079

EDUCATION

Boston University, College of Engineering, Boston, MA  
Bachelor of Science in Biomedical Engineering, Concentrating in Technology Innovation  
May 2017

Universidad Autónoma de Madrid, Madrid, Spain  
Semester-long Study Abroad Program  
Spring 2015

Selected Coursework


PROJECTS

Lesion-Specific QCT Improves Prediction of Pathologic Vertebrae Fracture Load, Senior Design  
Fall 2016 - Present  
- Investigating the effect of metastatic bone cancer on the architectural and material properties of vertebral bone in collaboration with Beth Israel Deaconess Medical Center

Neonatal Vitals Monitoring, Device & Diagnostic Design  
- Designed a basic neonatal vitals monitor that incorporated EKG, temperature, and oxygen saturation, and improved efficiency, non-invasiveness, and neonate comfort

Virtual Reality Commercial Truck Driving School, Business Technology Innovation  
Spring 2016  
- Led a four-person team in creating a commercial truck driving school with VR as the backbone of our service
- Conducted in-depth market research, infrastructure research, and financial analysis

Strategy Lab, Boston University Consulting Group  
Fall 2016  
- Generating an analysis of the juice beverage market, and creating a recommendation for a co-packing service provider for a beverage to enter the market in collaboration with a five-person team

WORK EXPERIENCE

Beth Israel Deaconess Medical Center  
Research Student, Center for Advanced Orthopedic Studies  
Boston, MA  
Summer 2016 – August 2016  
- Characteraized the effect of cancer-derived lytic and blastic metastases on the architectural and mechanical properties of human vertebral bone through the use of clinical CT and XtremeCT and mechanical testing
- Constantly found solutions to problems affecting research methods in order to improve project efficiency

Technology Innovation Scholars Program  
Inspiration Ambassador  
Fall 2015 - Present

Venly Intern  
Summer 2015  
Cambridge, MA  
- Created social media advertisements on various platforms for Venly consultants to use to aid small businesses
- Organized and analyzed data using Excel for a project the CEO wanted to present to a potential client

Boston Medical Center  
Research Assistant  
Boston, MA  
Summer 2014
- Assisted the Project-RED team in analyzing and reforming the discharge process at associated hospitals
- Transcribed interviews using NVIVO software

LEADERSHIP AND AFFILIATIONS

College of Engineering, Senior Class Treasurer  
Fall 2016 - Present

Boston University Consulting Group (BUCG), Member  
Fall 2015 - Present

College of Engineering, Dean’s Host  
Spring 2014 - Present  
- Represent the College of Engineering at formal functions for prospective students and their families

National Society of Black Engineers (NSBE), Member  
Fall 2013 - Present

Biomedical Engineering Society (BMES), Member  
Fall 2013 – Present
Peter Cho
36 Horse Hill St. Dunstable, MA, 01827 (978)-302-4555 pcho4314@bu.edu

Education
BOSTON UNIVERSITY, BOSTON, MA
- Bachelor of Science: Double Major in Electrical Engineering and Biomedical Engineering
- Cumulative GPA: 3.31/4.00

Professional Experience
SECURUS MEDICAL GROUP, BEVERLY, MA
Engineering Intern, June 2016 – September 2016
- Aided senior engineers in designing and testing of an endoscopic infrared temperature scope
- Responsible for rapid prototyping of design concepts using CAD software, 3D printing, and machining
- Designed test protocols and documented test results adhering to FDA regulations for medical devices
- Inspected incoming parts to ensure they met appropriate tolerances, maintaining documents of these inspections as well as contributed in NCMR decisions

MUGAR MEMORIAL LIBRARY, BOSTON, MA
Security Assistant (Student Supervisor), June 2008 – August 2011
- Provide basic security and assistance to Mugar Memorial Library
- Oversee fellow student employees

Engineering Projects
CREATE BIOSENSOR TO MEASURE OXIDATIVE STRESS IN CORAL POPULATIONS (CAPSTONE PROJECT)
- Utilized fluorescence tagging of dimethylsulfoniopropionate (DMSP) to measure stress in coral population
- Created a computational model of fluorescence measurements through MATLAB
- Designed system consisting of analog fluorescence sensor, Arduino, and LCD monitor
- Programmed Arduino to measure and convert analog fluorescence input into a DMSP concentration

PULSE OXIMETER
- A pulse oximeter was constructed using LEDs, a light sensor, and a data acquisition (DAQ) board
- Designed circuit for analog signal amplification of voltage from light sensor
- Utilized LabVIEW to process and filter data

ELECTRIC CIRCUIT DESIGN AND TESTING
- Designed circuits using diodes, MOSFETs, BJTs, and other electrical components to create circuits that fulfilled designated parameters
- Modelled these circuits using PSPICE software to confirm the design met the designated parameters
- Tested these circuits using breadboard and voltmeter

Additional Skills
COMPUTATIONAL
C, C++, MATLAB, LabVIEW, SOLIDWORKS, Onshape, Linux/Unix, Microsoft Office, SiteKiosk

TECHNICAL
Microcontroller programming, Analog circuit design, Digital signal processing through DAQ board, Machining (lave, mill, etc.), 3D printing on MakerBot, Failure Analysis
EDUCATION
Boston University School of Medicine, Boston, MA
Doctor of Medicine, anticipated May 2021
Boston University, College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering, May 2017
GPA: 3.90/4.00, summa cum laude

Awards: Lutchen Fellowship

Relevant Coursework:

PROJECTS
Senior Design Project: Developed a computational algorithm that detects and measures lipid droplets in engineered adipose tissue. Designed 3D adipose models using mouse 3T3-L1 adipocytes and type I collagen gels. Created a MATLAB algorithm that detects lipid droplet characteristics in computer-generated ideal images, then applied this algorithm to images of adipose tissue models. Generated images using phase and fluorescent microscopy.

Other Projects:
• Developed Android app that gave user a guided tour of 27 attractions in Boston
• Used saccadic eye movements and MATLAB code to analyze choice reaction time to auditory stimuli

SKILLS
C++, MATLAB, cell culture, maskless lithography, time lapse microscopy, fluorescent microscopy, nuclear magnetic resonance, infrared spectroscopy, PCR, gel electrophoresis, titration, spectrophotometry

EXPERIENCE
Volunteer
January 2014 – September 2015, October 2016 – Present
MGH Pediatrics Hema. Onc.                 Boston, MA
• Occupy and guide patients and/or other children during appointments, organize and supervise activities for patients to participate in while receiving treatment
• Assist child-life specialists in preparing for events held for patients, ensure sterility and organization of clinic

Mailroom Assistant
September 2014 – Present
Boston University Dormitory Mailroom                 Boston, MA
• Receive, organize and sort shipped packages and mail in a timely fashion and deliver mail to other mailrooms on campus in collaboration with other student workers
• Provide student services by checking packages out to students and aiding with delivery issues

EK301 Grader
September 2015 – December 2015
BU College of Engineering                 Boston, MA
• Graded and corrected homework and quizzes for Engineering Mechanics I (EK301) on a weekly basis
• Discussed solutions and corrections with professors and graduate students, and assigned grades

Undergraduate Research Assistant
June 2014 – August 2014, January 2015 – September 2015
Biomimetic Materials Engineering Laboratory                 Boston, MA
• Investigated the causes and mechanisms of directed migration using microcontact printing, traction force microscopy, and immunofluorescence staining in collaboration with a graduate student
• Performed experiments using time lapse microscopy observing cell response on hydrogels with stiffness gradients and coated in particular extracellular matrix proteins
• Created polyacrylamide hydrogels with gradients in stiffness and different types of extracellular matrix protein coupled onto the surface using maskless lithography
• Cultured cells; changed cell media, split cell populations such that dishes stay sparse, seeded cells onto gradient polyacrylamide gels for experiments
• Autoclaved glassware, pasture pipettes, and other supplies, and created common chemicals for entire lab

PROFESSIONAL ASSOCIATIONS
Alpha Eta Mu Beta (AEMB), member since December 2015, treasurer for 2016-2017 academic year
Tau Beta Pi (TBP), member since December 2015
Asian American Christian Fellowship (AACF), member since September 2013
Relevant Work Experience
Research Assistant – Boston University College of Engineering (Boston, MA) December 2014-Present
Orthopaedic and Developmental Biomechanics Laboratory
- Analyze trabecular bone mineral density correlating to endplate deflection in spine samples
- Dissect human functional spine units to extract mid-sagittal sections of IVDs for histology, Thompson grading, and chemical analysis

Research Assistant – Sydney University (Sydney, Australia) January 2016 – February 2016
Laboratory for Integrated Polymer and Systems Engineering
- Conducted literature review on recent research in the field of carbon dot polymer scaffolds
- Assisted PhD students in their experiments to produce and test polymer-conjugated quantum dots

Selected Publications and Poster Presentations
18th Annual Undergraduate Research Symposium, Boston, MA, October 16, 2015

Education:
Boston University College of Engineering (Boston, MA)
B.S. in Biomedical Engineering, Concentration in Nanotechnology; Cum Laude Expected, May 2017
Overall GPA: 3.6/4.0 Engineering GPA: 3.8/4.0

University of Sydney, Faculty of Engineering and Information Technologies (Sydney, Australia)
Study Abroad Program; GPA: 3.8/4.0 Spring 2016

Relevant Coursework:

Academic Projects
Device and Diagnostic Design
- Designed and prototyped a surgical dermatome for use in low-resource settings
- Demonstrated device compliance with current FDA standards, including FMEA analysis

Biomedical Measurements
- Designed an experiment to test the effect of heart rate on recovery rate from minor hypoxemia
- Proved positive correlation between heart rate and blood oxygen level recovery rate

Principles of Molecular Cell Biology and Biotechnology
- Course lab section culminated in a report demonstrating the effect of inducer concentration on the genetic expression of Green Fluorescent Protein in Escherichia Coli cells

Technical Skills
Spectroscopy, Solution Preparation and Dilution, Dissection of Human Cadaveric Spines, Micro-Computed Tomography and Microstructural Analysis, Staining for Histological Grading, Gel Electrophoresis, PCR

Honors:
Alpha Eta Mu Beta, National Biomedical Engineering Honor Society Fall 2016
Summer Term Alumni Research Scholar at Boston University Summer 2015
Undergraduate Research Opportunity Program Participant Summer 2015
Boston University College of Engineering Dean’s List Recipient Four Semesters
Eagle Scout October 2012

Other Activities
Club Water Polo at Boston University (Boston, MA) February 2014 – Present
Big Brothers Big Sisters of Massachusetts Bay (Boston, MA) March 2014 – June 2015
Alexander Thomas Czaja

Permanent Address: 43 Long View Road, Trabuco Canyon, CA 92679
Phone: (949) 973-3654
Email: atczaja@gmail.com

Education
Boston University Present
- Majored in biomedical engineering
- Took classes in physics, calculus, molecular biology, fluid mechanics, thermodynamics, object-oriented programming, algorithms
- Earned Engineering Dean’s List
- Senior Design Project: Developing nanoparticles for oligonucleotide and curcumin delivery to malignant cells to study synergistic effects with tyrosine kinase inhibitors

Professional Experience
Research Assistant at Boston University Hearing Research Center 2014, 2015
- Lab funded by Living Marine Resources (LMR) grant from the US Navy
- Involved data analysis on various physiological aspects of marine hearing in baleen whales
- Handled stacks of Computed Tomography scans of dissected hearing anatomy, reconstructed middle ear bones, and simulated stapes footplate displacement and frequency response from frequency sweep input
- Worked with 3-D software reconstruction and physics modeling methods using MATLAB, Autodesk Maya, and COMSOL Multiphysics
- Hired for programming experience as well as physical modeling interest

Engineering Intern at Foundation Medicine 2015, 2016
- Company provides comprehensive genomic profiling for cancer patients using next generation sequencing and sophisticated computational analysis to report to oncologists the oncogenic nature and drug susceptibility of patient’s disease.
- Performed daily operations tasks to keep track of samples and report on team’s progress
- Wrote software in Python and R to visualize copy number artifact patterns
- Improved screening tool in Python to increase performance, correctness, and detect known genomic events based on chromosome position of mutation

Engineering Intern at Freedom Innovations 2014
- Worked with research and development team on microprocessor controlled prosthetic devices
- Designed and used laboratory environments for water submersion testing
- Performed endurance testing on knee prostheses
- Analyzed water submerged stress testing data and gave technical report

Additional Information
Programming Languages
- C/C++, MATLAB, Python, R

Languages Spoken
- English: native speaker
- Spanish: took 5 years of classes
Rahul Daftari
700 Commonwealth Avenue, Boston, MA 02215    ▪    (630)-605-5628    ▪    rdaftari@bu.edu    ▪    www.linkedin.com/in/rahuldaftari

Education

Boston University College of Engineering         May 2017
▪ Bachelor of Science in Biomedical Engineering
▪ Minor in Philosophy; Concentration in Technology Innovation
▪ GPA: 3.23/4.00; Dean’s List (Two Semesters)

Awards

Relevant Coursework
▪ Business of Technology Innovation (SI480), Strategy for Tech-Based Firms (SI482), International Entrepreneurship (SI471), Introduction to Software Engineering (EC327), Product Design and Innovation (BE467), Control Systems in BME (BE402).

Work Experience

Engineering Intern at Securus Medical Group, Inc.         May 2016 – August 2016
▪ Gained medical device industry experience with emerging start-up team, developed non-contact thermal imaging probes for atrial ablation procedures, and combined IR spectroscopy and traditional thermocouple imaging into real-time 3D heat maps.
▪ Designed and implemented test methods and protocols, performed critical error testing, created work instructions and test reports for manufacturers and suppliers, generated prototypes for new iterations, and manufactured custom parts.

Resident Assistant at Boston University Residence Life       June 2015 – Present
▪ Managed community of 40+ residents through programming & counselling, and fulfilled clerical services for 600+ students.

Research Assistant at Neuro-Engineering & Optogenetics Laboratory      January 2014 – June 2014
▪ Processed outputs of cholinergic neurons in murine samples in response to combined auditory and optogenetic stimulation.
▪ Refined data with LabVIEW and MATLAB code that was later implemented into the permanent lab protocol.

Engineering Projects

Biomedical Engineering Capstone Project  August 2016 – Present
▪ Developing a functional biosensor in the National Emerging Infectious Diseases Laboratory (NEIDL) for measuring pre-bleaching oxidative stress in marine coral populations via byproduct compound DMSP’s biochemical breakdown pathway.

ClubConnect Android Application       September 2016 – December 2016
▪ Processing Developer: Collaborated on a multi-disciplinary team implementing back-end functionality of Android app designed to authenticate user credentials and generate, read-from, and write-to databases with club information from college campuses.

Skills & Abilities

Computer Applications
▪ C++ Applications, C Family, GitHub, Assembler, Java, XML, MATLAB, SolidWorks, OnShape, LabVIEW, PyMOL, Microsoft Office, Minitab, UNIX/Linux, Android Studio, GCC Compiler Collection, SQL Databases, NoSQL Databases, OOAD with UML Modelling.

Technology & Electronics
▪ Test Target Generator (TTG), Machining (Lathe, Mill, Grinder, etc.), Logic-Based Circuits, RLC Systems with Filters, Bode Plots, Operational Amplifiers, Data Acquisitions (DAQ) Systems appended by Oscilloscopes and Waveform Generators.

Laboratory
▪ Infrared Spectroscopy (IR), Nuclear Magnetic Resonance (NMR), Thin Layer Chromatography (TLC), Gas Chromatography/Mass Spectrometry (GC/MS), Gel Electrophoresis, Molecular Cloning, Polymerase Chain Reaction (PCR), DNA Recombination.

Leadership & Affiliations

Society of Asian Scientists and Engineers (SASE)  September 2013 – Present
▪ Northeast Regional Coordinator: Managing chapter presidents at UMass Amherst, WPI, RIT, and RPI for national leadership.
▪ President of the Boston University Collegiate Chapter of SASE and winner of BU’s Excellence in Student Activities Award.
▪ Northeast Regional Conference Chair: Lead organizer of SASE’s 2015 Northeast Regional Conference.
  ▪ Increased attendance by over 220%, fundraised over $20,000, and administered team of 50+ students.

American Parliamentary Debate Association (APDA)  September 2013 – Present
▪ Tournament Director: Lead organizer of BU’s fall and spring intercollegiate parliamentary debate tournaments.
MOHIT DANGETI
44 Ashford St. Apt. 1, Boston, MA 02134  •  503-803-9749  •  mdangeti@bu.edu  •  linkedin.com/in/mohitdangeti

EDUCATION
Boston University College of Engineering, Boston, MA  •  May 2017
Bachelor of Science in Biomedical Engineering, Concentration in Technology Innovation
G.P.A.: 3.14 /4.00

Universidad Autónoma de Madrid, Madrid, Spain  •  Spring 2015
Madrid Abroad Engineering Program

PROJECTS
Characterization of Lytic and Blastic Metastases, Senior Design Project  •  September 2016 – Present
• Apply clinical and extreme CT to characterize effect of lesions on vertebral bone for bone cancer patients
• Conducted vertebral preparation and mechanical testing to characterize effect of lesions on vertebral strength

Biodegradable and Biocompatible Scaffold for ACL Surgery Repair  •  September 2016 – December 2016
• Worked on a team to research and design a biodegradable scaffold to mitigate the use of an autograft
• Created technical documentation to bring product to market based on FDA standards.

Surface Solutions Irrigation Controller  •  January 2016 – May 2016
• Designed a dynamic system that supplies the correct amount of irrigation for each specific of crop and factors in climate
• Proposed as an economic alternative to current surface irrigation methods

Nerve-Specific Fluorophore Synthesis  •  June 2015 – August 2015
• Conducted Cross-Coupling reactions to synthesize nerve specific fluorophore
• Lead Suzuki reactions to modify Atto 488 and Bodipy to be more nerve-specific

TECHNICAL SKILLS
Computer: MATLAB, Photoshop, MS Office, C++
Laboratory: Gel Electrophoresis, Polymerase Chain Reaction, Cross Coupling Reactions, Suzuki Reactions

EXPERIENCE
invicro, LLC, Boston, MA  •  June 2016 – August 2016
Contract Research Intern
• Compiled results of experiments conducted into study reports on behalf of various pharmaceutical sponsors
• Collaborated actively with Contract Research team to provide exceptional research service for sponsors
• Presented before entire team regarding invicro’s medical imaging portfolio expansion

Oregon Health & Science University, Portland, OR  •  June 2015 – August 2015
Research Intern
• Developed novel imaging reagents to improve macroscopic and microscopic cancer imaging applications
• Modified premade imaging dyes to more accurately stain designated tumors, resulting in simpler removal

Boston University, Boston, MA  •  September 2014 – December 2014
Undergraduate Learning Assistant, Chemistry Department
• Presided over lectures and led discussion sections for undergraduate chemistry course
• Assisted faculty members with classroom instruction, exams, record keeping, and other miscellaneous projects

Boston University, Boston, MA  •  September 2014 – December 2016
Office Assistant, College of Engineering Career Development Office
• Act as first point of contact for employers looking to hire students and students seeking professional advice

LEADERSHIP AND AFFILIATIONS
Boston University College of Engineering, Lead Engineering Ambassador  •  January 2015 – Present
Kappa Sigma Fraternity, Judicial Board Member  •  September 2015 – Present
College of Engineering Student Government, Senior Class Secretary  •  September 2016 – Present
Boston University College of Engineering, Student Advisor  •  September 2016 – December 2016
OBJECTIVE
An entry-level Engineering position with an emphasis on the research, development, quality, and manufacturing of Medical Devices

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering, May 2017


EXPERIENCE
Smith & Nephew Endoscopy, Mansfield, MA
Quality Co-op Engineer
• Developed and coded a visual guidance system to aid clean room workers in the assembly of medical device products. Devised and completed process and validation documentation
• Worked on and finalized PFMEAs, CAPAs, validations, IQ/OQ/PQ, MSAs, JHA, Process maps
• Ran meetings for Light Guide System and presented final research results to supervisors
• Analyzed statistical and qualitative data from MSA testing using Minitab & excel
• Developed firm understanding of FDA regulations and participated in company audit
• Designed & 3-D printed a pouch guide box in SolidWorks to help operators accurately seal pouches

Boston University Medical Campus, Boston, MA
Research Assistant
• Received funding from BU’s Undergraduate Research Program to investigate the dopamine pathway’s role in regulating the extracellular matrix in developing Zebrafish embryo
• Led and worked with a team of fellow undergraduate research assistants
• IR spectroscopy and fluorescence microscopy, staining techniques, immunohistochemistry
• Set up, operated, and troubleshot animal-tracking software, received animal-care training

PROJECTS
Senior Project: “A comparative Biomechanical Study of the Surgical Reconstruction of the Scapholunate Ligament” Built and coded a computer-controlled wrist joint motion simulator to functionally move cadaveric forearms using strings attached to 6 targeted muscles. Developed a GUI for observing and adjusting real-time motion and force data for 4 different wrist motions. Used OpenSim software to calculate and devise an ideal motion path for healthy wrist muscles.

Additional Projects:
• Designed a device that prevents the use of contaminated surgical instruments on patients from prior surgeries. Prevents tissue, blood, and debris from hardening in a tool
• Studied the effects of caffeine stimulants on peripheral vision and reflexes
• Designed a truss and constructed a MATLAB code to evaluate member forces

SKILLS
Laboratory: Oscilloscope & EOG/ECG, IR Spectroscopy, Fluorescent Imaging Embryonic Staining, Immunohistochemistry, Basic Circuitry, Microscopy, Six-Sigma & Lean Experience
Computer: SolidWorks, Minitab, MATLAB, COMSOL Multiphysics Modeling, Excel, Arduino

ACTIVITIES
Biomedical Engineering Society (BMES) 2013-Present
Boston University Men’s Club Soccer Team 2013-Present
Founder of Engineering Club in High School 2011-2013
LIDIA DE BARROS
14 Curve St., Brockton, MA, 02302 | 508-405-7569 | lliliane@bu.edu
https://www.linkedin.com/in/lidiadebarros

EDUCATION
Boston University, College of Engineering
B.S. in Biomedical Engineering
Concentration in Technology Innovation
May 2017
G.P.A.: 3.52/4.00

Universidad Autónoma de Madrid, Madrid, Spain
Madrid Semester Abroad Engineering Program
January 2015 – May 2015

Honors: Member of National Biomedical Engineering Honor Society (AEMB)
Engineering Dean’s List (Four Semesters)

SKILL HIGHLIGHTS
Computer: Excel, SolidWorks, ABAQUS, MATLAB
Languages: Fluent in Portuguese, Spanish and Cape Verdean Creole

LEADERSHIP EXPERIENCE
Secretary, National Society of Black Engineers
April 2016 – Present

Engineering Ambassador, Boston University College of Engineering
September 2016 – Present
• Give tours of engineering facilities to prospective engineering students and their families

Inspiration Ambassador, Technology Innovation Scholars Program
September 2015 – May 2016
• Visit high schools in the Boston area to inspire students to pursue engineering through activities and presentations

INTERNSHIP EXPERIENCE
Technology Consulting Analyst
June 2016 – August 2016
Accenture
Austin, TX
• Worked in teams to deploy a new point-of-sale platform to the Whole Foods Market stores across North America
• Responsible for tracking and follow-up of deployment related issues and risks
• Contributed to the creation of materials and facilitation of Daily Deployment Review meetings

RESEARCH EXPERIENCE
Senior Design Project
September 2016 – Present
Bioventus
Boston, MA
• Investigated chemical modifications to decrease residence time of a growth factor carrier
• Conducted experiments for preparation and analysis of the ceramic carrier
• Delivered progress reports, oral and poster presentations (Northeast Bioengineering Conference - NEBEC)

Undergraduate Research Assistant
University of California, San Diego
June 2015 – August 2015
San Diego, CA
• Collected and analyzed data to evaluate the role of adhesion in neutrophil migration
• Cultured cells, made systems of hydrogels and wrote MATLAB scripts to analyze cell migration
• Presented research findings at the UCSD Summer Research Conference

Research Experience for Undergraduates
North Carolina Agricultural and Technical State University
June 2014 – August 2014
Greensboro, NC
• Researched effects of biodegradable magnesium screws in the temporomandibular joint
• Used SolidWorks to model screws and ABAQUS/CAE to perform Finite Element Analysis on models
• Awarded first place in PowerPoint and poster research presentations at the NC A&T Summer Symposium

PUBLICATION
Brandon C. DeLeva  
2401 Race Ave, Medford, NY 11763  
bdeleva@bu.edu  
631-805-8191

Education

Boston University College of Engineering; Boston, MA  
• BS; Biomedical Engineering (May 2017)  
• Coursework in Systems Physiology, Device Design, Control Systems, Technology  
  Innovation in Business, and Business Strategy

Professional Experience

A & M Auto Sales, Inc. Medford, NY  
2013-Present  
Acting Office Manager  
• Organized and prepared financial documents for corporate accountant  
• Implemented an online inventory system to manage purchase and sale of vehicles  
• Coordinated transportation of vehicles  
• Attended auctions to purchase vehicles

A & M Auto Sales, Inc. Medford, NY  
2011-2013  
Office Assistant  
• Managed daily inventory of vehicles  
• Prepared NYS DMV documents for the sale of vehicles  
• Managed accounts payable and maintained company financial records

Research & Design Experience

Boston University Human Trafficking Research Team  
Feb 2016-Present  
Research Assistant/Director  
• Collected and organized data from case files  
• Compare and analyze data from a collection of case files  
• Conduct data reliability studies between data sets  
• Organize and facilitate weekly meetings

EpiPen Storage Device  
Neonatal Vital Signs Monitoring Device  
Sept-Dec 2016

Relevant Skills

• Proficient in Spanish  
• Effective oral communications and team building skills  
• Experience with business operations and management  
• Proficient in MATLAB programming software and MS Office suite
Chen Dong
120 Mountfort ST Apt401, Boston, MA, 02215
(617) 386-3046 – dongchen@bu.edu

Profile
Forward-thinking Biomedical Engineer in senior year with academic and leadership training Boston University. Proven skills in project management, organization and research with a background in a global company. Able to provide employers with professional technical support and effective collaboration within a team.

Education

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
<th>Degree</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston University College of Engineering</td>
<td>Boston, MA</td>
<td>Bachelor of Science in Biomedical Engineering</td>
<td>2013.9 - 2017.5</td>
</tr>
<tr>
<td>Shanghai Nanyang Model High School</td>
<td>Shanghai</td>
<td></td>
<td>2010.9 – 2013.5</td>
</tr>
</tbody>
</table>

GPA 3.66/4.00

Skills
- The Mathworks MATLAB  
- LabView Program  
- iWorx and LabScribe 2  
- C++ Programming  
- Engineering software  
- Signal generator equipment  
- Scheduling tools  
- Project management  
- Process improvement  
- Team Player  
- Strong Engineering mind  
- Attention to details  
- Willingness to learn  

Internship Opportunities

<table>
<thead>
<tr>
<th>Institution</th>
<th>Duration</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>

Academic Project Highlights

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost Neonatal Monitoring Head Strip</td>
<td>Fall 2016</td>
<td>- Designed and constructed a low-cost head strip for neonates in low-resource area, with core temperature and heart rate monitoring functions. Experienced with optical pulse sensors and digital filters and amplifiers. Main designer and developer of the prototype circuitry and the Arduino code for the data acquisition-to-display system with an alarm feedback system.</td>
</tr>
<tr>
<td>HackJack C++ Programming</td>
<td>Spring 2016</td>
<td>- A marketable gamming program based on statistical results, which assists players ace on playing blackjack. Main code and algorithm developer, manipulating combinations of C++ knowledge including structures, functions, loops and if statements.</td>
</tr>
<tr>
<td>Eye Movement Code Deciper</td>
<td>Fall 2015</td>
<td>- Explores the use of the electrooculogram signal (EOG) to create a device prototype that tracks the sideways eyeball movement with different durations to precisely decipher a message in words. The movement of the subject’s eyes is tracked with LabView, and a program written using MATLAB is used to process the raw data collected and to translate them into the corresponding words/sentences. Central organizer and data analyst, utilizing multiple bioinstrumentations and software.</td>
</tr>
<tr>
<td>Mini Truss Design and Build</td>
<td>Spring 2015</td>
<td>- Designed and constructed a low-cost and robust truss with straws, pins and mechanics. Leader of the group and chair in meetings, putting thoughts together, setting goals for the group, guiding group members to discuss potential problems with best solutions and allocating works for members.</td>
</tr>
</tbody>
</table>
Danielle Dougherty
danidoc@bu.edu • (856) 649-6977

School Address                   Home Address
22 Buswell St., Box 42           42 Chestertown Rd.
Boston, MA 02215                  Erial, NJ 08081

EDUCATION
Boston University, College of Engineering, Boston, MA
• Bachelor of Science in Biomedical Engineering May 2017

Relevant Coursework
Molecular Cell Biology, Organic Chemistry I & II, Differential Equations, Principles of
Biochemistry, Thermodynamics, Business of Technology Innovation

ENGINEERING PROJECTS
Mechanics Truss Design Project Fall 2014
• Used engineering designs that adhered to specific specifications along with Matlab code
to predict how the truss would react under stress
Matlab Graphical User Interface Project Spring 2014
• Created a GUI in which it acted as speed reader after the book was read into the program,
allowing the user to pick the speed at which the speed reader operated
Senior Project - Optical tracking of anesthetized Caenorhabditis elegans
• Created an imaging rig and tracking system to quantify the behavior of C. elegans under
various experimental conditions

WORK EXPERIENCE
Enumeral Biomedical Holdings, Inc. Summer 2016 - Present
Engineering Intern Cambridge, MA
• Quality control of polymer microwell devices
• Running donor cell response profiling experiments using the Enumeral platform
• Designing parts in SolidWorks to be used on the Enumeral platform

Blenheim Construction, Inc. Summer ’13, ’14, ’15
Administrative Assistant Sicklerville, NJ
• Assist in everyday office operations
• Handle customer and employee relations
• Accounts payable

SKILLS: Matlab, Microsoft Office

AFFILIATIONS
Kappa Alpha Theta Spring 2015 – Present
• Cabinet Member serving as Ritualist (Fall 2015-Fall 2016)
• Archives Committee, Scholarship Committee
• Recruitment Counselor (“Pi Chi”) for Formal Recruitment (Spring 2017)
Boston University’s Joining Hands Club Spring ’14, ’15, ’16
• A community service club that spends time with the elderly of the Boston suburbs
Society of Women Engineers Fall 2014 – Fall 2015
Red Cross Club Spring 2014 – Spring 2015
Kamila Drezek

Local Address
98 Mountfort St. Apt 03
drezekk@bu.edu • (860) 593-0314
Boston, MA 02215

Permanent Address
87 Harold Rd
Farmington, CT 06032

EDUCATION
Boston University, College of Engineering – Boston, MA  May 2017
Bachelor of Science in Biomedical Engineering
• Dean’s list (6 semesters)

RESEARCH EXPERIENCE
Grinstaff Group & Beth Israel Deaconess Medical Center – Boston, MA  Sept. 2016 – May 2017
Undergraduate Research Assistant
• Developed synthetic polymer biolubricants for application in osteoarthritic knee joints
• Characterized biolubricants for their viscoelastic character using rheometry and determined their ability to reduce the coefficient of friction between ex vivo bovine cartilage surfaces using mechanical testing

Boston University iGEM Team – Boston, MA  May – Nov. 2016
Synthetic Biology Researcher
• Cloned a set of over 100 DNA circuit components utilizing CRISPR/dCas9 and recombinase technology
• Led mammalian cell transfection experiments with HEK293T cells and analyzed the functionality of DNA constructs using flow cytometry
• Co-wrote forums focusing on the ethical aspects of synthetic biology and guided discussions using these forums with high school students from the Boston area
• Awarded gold medal among 300 teams at the International Genetically Engineered Machine Jamboree

Tissue Microfabrication Lab of Christopher S. Chen MD, PhD – Boston, MA  Sept. 2014 – May 2016
Undergraduate Research Assistant
• Investigated cell migration in 2D and 3D cultures of HFF cells using spinning disk confocal microscopy and live cell imaging
• Studied forces exerted by HUVECs on the extracellular matrix during angiogenesis within microfluidic devices
• Awarded funding by the Boston University Undergraduate Research Program (2 semesters)

CLINICAL EXPERIENCE
Transport Aide
• Transported patients with oxygen tanks, intravenous pumps, cardiac monitors, and other medical equipment in wheelchairs, stretchers, and inpatient beds to different treatment areas within the hospital
• Transported laboratory specimens to many different facilities around the hospital

Brigham and Women’s Hospital – Boston, MA  Jan. 2013 – May 2015
Volunteer in the Medical Career Exploration Volunteer Program
• Guided visitors and outpatients to waiting rooms and nursing floors

SKILLS
Laboratory: Tissue culture, Molecular cloning, Immunofluorescence staining, Gel electrophoresis, PCR, Spinning Disk Confocal Microscopy, Live Cell imaging, Rheometry

Computer: MATLAB, Python, Adobe Illustrator, ImageJ, MS Excel, MS Office

Language: Intermediate Polish

Other: Volleyball, Tennis
Jacob Ferriero  
120 Edgewood Dr. Florham Park, New Jersey 07932 | jaketf@bu.edu | (973)-525-5683  
https://www.linkedin.com/in/jacob-ferriero

**EDUCATION**

Boston University college of Engineering, Boston, MA  (GPA: 3.27/4.0) May 2017  
Bachelor of Science in Biomedical Engineering (Minor in Mathematical Statistics)  
**Selected Coursework:**  
Computational Statistics, Software Engineering, Medical Imaging, Bioinformatics, Transport Phenomena in Living Tissue, Thermodynamics & Statistical Mechanics

**TECHNICAL SKILLS**

**Computer Programming:** C++, Java, Python, MATLAB, R, UNIX systems  
**Computer Software:** Mathematica, Vicon Nexus, OpenSim, Visual3D, SPSS, Microsoft Office, MathCAD, dSPACE Control Desk, LaTeX, R Studio (R markdown), MathCAD  
**Data Analysis:** EMG data, Force data, Image processing, Linear models, ANOVA, Monte Carlo Simulation, Graphical Models, Bootstrap methods, Non-parametric density estimation

**RESEARCH EXPERIENCE**

**Research Assistant** Human Adaptation Lab, Boston, MA  
Fall 2014 - Present  
- Analyzed hip angle data to computationally ID “limping” strides using MATLAB  
- Performed data collection on Force Plate Treadmill/Vicon Nexus Motion Capture system  
- Taught Seminar on inverse kinematic modeling gait in OpenSim  
**Funded Projects:**  
- Effect of Gait Speed on Hip Contact Forces  
- Effect of In-ear Headphones on GRF and Spatial Temporal measures of Gait Variability During Treadmill Running

**PROJECTS**

**Engineering Projects**  
Sept 2013 - Present  
- Senior Design: self-actuating treadmill control (Simulink, C++, Qt, dSPACE): Project Leader  
- Android App Development: Movie Picker (Java): Project Leader  
- Finding the Duplication Event for Ketohexokinase (Python): Data Analyst  
- Speed Reader GUI (MATLAB): Project Leader  
- Voice recognition (MATLAB): Software Engineer  
**Computational Statistics Projects (completed independently in R)**  
Fall 2016  
- Implementing the SWEEP operator for variable selection  
- Classifying traffic intersections: an exploration of expectation maximization  
- Graphical models in remote sensing ground cover: Gibbs sampling a Markov random lattice  
- Applications of bootstrap methods in linear regression and density estimation  
**Personal Raspberry Pi Projects**  
Summer 2016  
- Daily high frequency financial trading algorithm in real-time (python)  
- Cybersecurity Projects: Managed Tor node, Hosted VPN (OpenVPN)  

**AWARDS & AFFILIATIONS**

**Undergraduate Research Opportunities Program**  
Fall 2015 - Summer 2016  
- Funded for independent research projects for two semesters and a summer  
**Boston University Cross Country Track & Field**  
Sept 2013-Present  
- Compete for Boston University at a varsity Division I level
VICTORIA ANNE FRICK
176 Onondaga Avenue, Buffalo, NY, 14220 ● 716.861.0506 ● vafrick@bu.edu

EDUCATION:
Boston University College of Engineering
Bachelor of Science in Biomedical Engineering
Concentration: Technology Innovation
GPA: 3.3/4.0

Universidad Autónoma de Madrid
Semester long study abroad program, 20 credits

WORK EXPERIENCE:
GE Healthcare Life Sciences
OMLP Lean Process Intern
- Applied a method of organization to warehouse supermarket and set standard work for picking parts. Improved inventory management techniques and lean score of assembly.
- Coordinated with Environmental Health and Safety Leader on projects focused on increasing EHS awareness across the site including implementing a plan to track and calculate chemical usage on site and creating a guide detailing the EHS concerns and necessary precautions of on-site action workouts.

Boston University Department of Biomedical Engineering
Research Assistant – Synthetic Biology Laboratory
- Utilized cloning techniques including polymerase chain reactions and Gibson Assembly to multiply DNA sequences for insertion into bacterial cells.
- Monitored and maintained cell cultures to ensure healthy growth.

ENGINEERING PROJECTS:
sEMG Controlled Switch for Communication Access in Paralyzed Patients
- Utilized signal processing techniques in Arduino to filter and amplify raw sEMG signal for analysis.
- Designed a binary switch that produces an output based on the magnitude of an innervated muscle flex.
- Selected hardware components specifically for continued open source use of switch in hospital settings.

Granular Material Dispenser
- Designed and prototyped a dispensing machine equipped with an X/Y translational stage.
- Determined effective ways to address a client’s needs via concise communication while collaborating on a multidisciplinary team of four undergraduate engineering students.

ADDITIONAL EXPERIENCE:
Starbucks at Boston University
Student Manager
- Communicated responsibilities to team members to ensure quality and efficient team performance.
- Anticipated potential conflicts and succeeded in a fast-paced, changing environment.
- Facilitated communication between student employees and store management.

AFFILIATIONS AND COMMUNITY SERVICE:
Boston University Women’s Rugby Football Club
Executive Board Vice President
- Organized service and outreach events to increase student athlete involvement in the Boston area community.
- Planned and oversaw recruitment events; welcomed new players and supported their development as players.

Boston University College of Engineering Dean’s Host
- Represented Boston University at events such as Career Fairs and Open Houses for prospective students.

The Matthew Foster Foundation of Western New York
- Aided in the organization and execution of fundraising events to financially aid the families of children with cancer.

TECHNICAL SKILLS:
Microsoft Office, MATLAB, Fiji ImageJ, Solidworks 2016, Arduino
Melissa Garcia
917-557-9932 | mgarcia7@bu.edu | github: mgarcia7

EDUCATION

Boston University
Boston, MA
Bachelor of Science in Biomedical Engineering

GPA: 3.19/4.00
Dean’s List (past 2 semesters)

SELECTED COURSES

• General Chemistry I and II, Organic Chemistry I and II, Cellular Biology, Systems Physiology, Introduction to Molecular Bioengineering
• Introduction to Software Engineering, Algorithms and Data Structures
• Computational Biology, Computational Synthetic Biology
• Introduction to Databases and Data Mining, Data Mechanics

SELECTED PROJECTS

Senior Design: Engineering Adipose Tissue (2016-2017). Designed an algorithm to detect and measure individual lipid droplets in a microscope image of an adipose cell-collagen construct. (MATLAB)

Exploring Genetic Design Spaces (2017). Developed methods to intelligently explore genetic design spaces using graph traversal techniques in Knox (a genetic design space version control database). (Java, Neo4j)

Food Accessibility and Obesity in Boston (2016). Used datasets from City of Boston Open Data Portal and from RTI International in order to explore the relationship between food accessibility and obesity in Boston by neighborhood. (Python, MongoDB)

BBDownloader (2016). Created a web scraper that downloads all course-related materials from Blackboard Learn. (Python)

TECHNICAL SKILLS

• Git/Github
• C++; Python; Java; MATLAB; SQL; LabVIEW
• Experience using MongoDB, Neo4j, SQLite

WORK EXPERIENCE

Anthropology Department at Boston University
Administrative Assistant
Boston, MA
2013-2017

• Provided administrative support to Department Administrator and Anthropology faculty
• Created more efficient workflows to streamline Anthropology student registration process

Douglas Elliman
Filing Assistant
New York, NY
Summer 2015

• Filed important and confidential documents
• Alphabetized and reorganized the filing cabinets
PADRIC GARDEN
Boston, MA 02215 pgarden@bu.edu

EDUCATION

Boston University, Boston, MA
Bachelor of Science in Biomedical Engineering, Minor in Chemistry
Current GPA: 3.59
Dean’s List: 5 Semesters
May 2017

Universidad Autónoma de Madrid, Madrid, Spain
Semester Study Abroad Program – Engineering
Spring 2015

Relevant Course Work:

PROJECTS

Optical Tracking of Anesthetized *Caenorhabditis elegans* Academic Year 2016-2017
Developed physical imaging rig and related tracking software (developed in MATLAB) for long-term tracking of *C. elegans*. Data was collected for worms both recovering from anesthesia and after neuron laser cutting surgery in order to correlate these conditions with behavioral changes.

HemoSTAT: Simulated Product Design and Development Fall Semester 2016
Developed a theoretical product, HemoSTAT, a hemostatic gel application system aimed at emergency wound treatment. Discussed and planned for validation, risk analysis, FDA regulation, IP strategy, and other considerations that would be required to bring this product to market.

SkeleTone Hearing Aid Business Model Spring Semester 2016
Designed the hypothetical business model for a noninvasive bone conduction hearing aid. Considered market forces, barriers to entry and other factors to construct a business plan and used financial data to approximate the costs of operations and business financials for a 5-year projection.

EXPERIENCE

Confer Health, Boston, MA
Associate Scientist
May 2017 – Current
- Worked to develop and optimize the use of a nanoparticle-based assay for use in at-home diagnostics.
- Independently designed and performed biological laboratory experiments.
- Analyzed results and kept organized records in an electronic laboratory notebook.
- Participated in meetings and scientific discussions with Senior Scientists and Company Executives.

Confer Health, Boston, MA
Laboratory Research Intern
May 2016 – May 2017
- Worked to develop and optimize the use of several assays for potential use in diagnostics.
- Helped design and perform biological laboratory experiments.
- Helped Analyze results and kept organized records of experimental data.

Boston University: Physics Department, Boston, MA
Laboratory Assistant
September 2014 – May 2016
- Set up and delivered laboratory equipment.
- Assisted professors and laboratory coordinators.
- Handled mechanical and electrical devices.
- Organized stock room.

SKILLS

Laboratory:
Protein and Nucleic Acid Purification, Click Chemistry Conjugation, Immunoassay, Gel Electrophoresis, Polymerase Chain Reaction, IR-UV-Vis Spectroscopy, NMR, TLC, LCMS, GCMS, Column Chromatography, Organic Synthesis & Purification, Cell Culture, Aseptic Techniques, Optical Microscopy, Breadboard Circuit Design, Soldering, Electrocardiogram, Electromyogram, Ultrasound

Computer:

Language:
Conversational in Spanish
Katherine L. Girouard
71 Chester Street Apt #5, Allston, MA 02134 • (440) 318-4782 • giroukat@bu.edu

Work Experience

Fall 2016 – Current  Technology Innovation Scholars Program  Boston University
Inspiration Ambassador
• Worked directly with high school students to teach problem solving skills and inspire STEM studies
• Mentor for the Saint Joseph Preparatory High School FIRST Robotics Competition team

Summer 2016  Medtronic (HeartWare, Inc.)  Framingham, MA
Verification & Validation Engineering Intern
• Defined requirements for a light and sound testing system to IEC standards for medical device alarms
• Designed and constructed a portable anechoic chamber for use in verification & validation testing
• Documented the chamber design and performed qualification testing to complete tool validation

Fall 2014 - Current  Stepp Lab for Sensorimotor Rehabilitation Engineering  Boston University
Research Assistant
• Software-based data analysis, research design, computer programming and mobile app development

Education

Current Undergraduate Student  Boston University, College of Engineering
• Biomedical Engineering, Class of 2017
• Boston University Presidential Scholar; Dean’s List 6 semesters; GPA 3.59

Study Abroad Spring 2015  La Universidad Autónoma de Madrid, Spain
• Full course load and lab classes in an integrated classroom; developed conversational fluency in Spanish

Skills
• Proficient in Java, JavaScript, html, CSS, MATLAB and SQLite programming languages; SolidWorks design
• Cross-platform mobile application development for Android, Windows Phone and Apple devices
• Verification & Validation engineering
  o Scoping and Gantt chart project planning
  o User needs and requirements writing; product design specification documentation

Activities
• Member of Alpha Eta Mu Beta, National Biomedical Engineering Honor Society
• College of Engineering Dean’s Host; represent Boston University at formal functions, recruitment events

Honors & Awards
• Undergraduate Research Opportunities Program (UROP) competitive grant recipient (2015 & 2016)
  • Research in the Stepp Lab for Sensorimotor Rehabilitation at Boston University:
    ▪ Led efforts to quantify vocal changes in teachers by fundamental frequency analysis methods
    ▪ Developed and published a mobile application for electronic documentation in voice therapy
• Summer Term Alumni Research Scholarship (STARS) Grant Recipient (2015)
• Girl Scout Gold Award recipient (2013)

References available on request
EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering May 2017
Dean's List (All semesters) Magna Cum Laude

EXPERIENCE
Laboratory for Molecular & Cellular Dynamics, Prof. Muhammed Zaman
Research Assistant January 2016 – Present
Boston, MA
• Create image analysis tools in MATLAB to investigate cellular structure.
• Generate new protocol for creation of hydrogels in order to investigate mechanosensing in cancer.
deCODE genetics
Summer Intern in Bioinformatics department Summer 2015, 2017
Reykjavik, Iceland
• Wrote scripts in Python for the retrieval and analysis of sequence and genotype data to help identify genetic risk factors. A number of programs now used daily within the company.

Boston University, Mechanical Engineering Department
Teaching Assistant Spring 2014 – Present
Boston, MA
• Lead discussions and labs to help students understand basic programming concepts and engineering applications through MATLAB.

PROJECTS
Senior Design Fall 2016 - Present
• Working with Medtronic to introduce hydrophilicity and a hydration system to a two-catheter heart valve delivery system to decrease deployment forces.

PassWord App Fall 2016
• Team project aiming to create a fun word game using Android Studio.

Ocular-controlled Cursor Fall 2015
• Served as Lead Programmer on team project. Created MATLAB program receiving live data from an EOG to move cursor on screen in real time.

Shard Dispenser Fall 2014
• Designed a polymer dispensing device for Benevolent Technologies for Health to meet 5 efficiency goals.

LEADERSHIP
Executive Vice President December 2015 – January 2016
Alpha Delta Pi, Rho Chapter
• Serve as a liaison between the chapter and both International and Executive Offices.
• Lead weekly Executive Committee meetings to ensure the organization is on track and to maintain transparency within the organization.

Student Advisor Fall 2015 – Present
Boston University College of Engineering
• Prepare and lead weekly discussions and guide incoming engineering freshmen to ensure their success within the college of engineering.

Dean's Host Spring 2014 – Present
Boston University College of Engineering
• Represent the College of Engineering in open houses, First Robotics Convention in New York and various other events.

Lead Engineering Ambassador Spring 2015 – Fall 2016
Boston University College of Engineering
• Train Engineering Ambassadors to represent the College of Engineering and lead tours for prospective students.

SKILLS
Computer: C, C++, Python, MATLAB, R (Introductory level), ImageJ, Microsoft Office
General: Cell culture, PCR, Basic logic gates, circuit board design

AFFILIATIONS AND INTERESTS
Tau Beta Pi, Alpha Eta Mu Beta, Society of Women Engineers: Mentor, Biomedical Engineering Society: Member, Panhellenic Honors Society, Alpha Delta Pi, Figure Skating coach for Special Olympian (2011-2013), Greater Boston Food Bank
Ander Gomez
33 Harry Agganis Way • Boston, MA • 02215 • 201-421-0441 • aggomez@bu.edu • linkedin.com/in/andergomez/

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering
Concentration in Nanotechnology

Selected Coursework:

ENGINEERING PROJECTS
Senior Project: Inter-epithelial Transfer of Exosomal Nitric Oxide Synthase and P-glycoprotein Promotes Inflammation in Sinonasal Epithelial Cells
September 2016 - Present
- Determining Nitric Oxide Synthase’s presence in sinonasal epithelial derived exosomes and exploring variations after lipopolysaccharide exposure
- Establishing Nitric Oxide Synthase’s and P-glycoprotein’s functionality in exosomes and to determine their function in the innate immune system in the sinuses via ELISA

Musical Peaks and Heart Rate: A Multivariate Examination
Fall 2015
- Explored a biomedical measurement technique in detail and carried out an investigation of a correlation between heart rate and music in a team of five members

WORK EXPERIENCE
Celgene Cellular Therapeutics
Cell Process Development Intern
May 2016 – August 2016
Warren, NJ
- Developed new small scale GMP experimental models of commercial processes for natural killer cells using aseptic techniques for cell culture while maintaining standards of cytotoxicity and specificity via flow cytometry
- Participated in weekly development meetings to pitch ideas and discuss the progress of the group’s goals

Boston University College of Engineering
Program Assistant
January 2016 – Present
Boston, MA
- Help current students become more knowledgeable about the Engineering Programs available and how to plan around them

- Managing class reviews, open houses, orientation, and faculty connections to Undergraduate Programs

Boston University Orientation
Summer Student Advisor for the College of Engineering
March 2015 – August 2015
Boston, MA
- Led and mentored incoming students in the transition to Boston University
- Assisted staff and faculty advisors in providing an efficient and personalized method of registration and academic advising for incoming students

LEADERSHIP SKILLS
Boston University Community Service Center
Alternative Service Break Coordinator
November 2015 – April 2016
Boston, MA
- Coordinated and led a public health trip to San Juan, PR while facilitating group activities and reflections during the trip

Boston University College of Engineering
Lead Engineering Ambassador
September 2014 – Present
Boston, MA
- Representing the college while facilitating outreach events and training other students to conduct tours for prospective students
EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering, Summa Cum Laude
GPA: 3.95/4.00; Dean's List - seven semesters

RESEARCH EXPERIENCE

Food and Drug Administration, Winchester Engineering and Analytical Center
Pathways Student Intern
• Optimized paper-based diagnostic device for viral infectious agents

Boston University, Tissue Microfabrication Laboratory
Research Assistant
• Investigated tendency of engineered proteins to cause osteogenic differentiation in human stem cells using quantitative techniques
• Designed experiments in microfabricated devices to quantitatively describe epithelial gap closure in three dimensions using confocal microscopy and time-lapse imaging
• Analyzed matrix alignment in in vitro models of sclerodermic fibroblasts via immunohistochemistry and gene expression analysis

University of Nebraska Medical Center, Department of Internal Medicine
Summer Research Scholar
• Explored methods of inhibiting the transcription factor NF-κB in models of acute pancreatitis
• Reviewed patient charts to investigate link between development of post-procedural acute pancreatitis and intake of immunosuppressant drugs

SENIOR DESIGN PROJECT

Murine Muscle Contusion Device
• Designed a device to cause muscle contusion with quantitative analysis of impact mechanics
• Investigated the recruitment of stem and progenitor cells to the site of muscle trauma in the context of heterotopic ossification

SKILLS

Laboratory: Basic mammalian cell culture, cell fixing and staining, RNA extraction, cDNA conversion, qPCR, Western blotting; immunohistochemistry, immunofluorescence, confocal microscopy, lateral flow diagnostics

Technical: MATLAB; C++, SolidWorks, UV/Vis, ImageJ, Metamorph, EpicCare

OTHER EXPERIENCE

Boston University, Office of Residence Life
Resident Assistant
• Promoted academic excellence, addressed student needs, and encouraged involvement among residents in support of the mission of Residence Life at Boston University

HONORS AND AWARDS

Boston University Trustee Scholar
Kenneth R. Lutchen Distinguished Summer Research Fellow
Alpha Eta Mu Beta – Biomedical Engineering Honor Society
• 2016 National Outstanding Chapter Member

Tau Beta Pi– Engineering Honor Society

LEADERSHIP AND ACTIVITIES

Engineering Dean’s Host and Lead Ambassador
• Represented the College of Engineering to prospective students

Residence Hall Council Treasurer
• Managed $15,000 budget and coordinated over 40 events to engage residence area serving 1500 students

Community Service – Empowerment League

128
Matti Groll  
33 Harry Agganis Road  
Boston, MA 02215  
(480)-433-2490

Personal
- Finnish/American Dual Citizenship
- Fluent in Finnish

Academics
- Current College GPA: 3.91
- Senior at Boston University studying Biomedical Engineering
- Boston University Kilachand Honors College
- Member of Tau Beta Pi (Engineering Honors Society)
  - Leadership Position: Corresponding Secretary (2016-2017)
- Member of Alpha Eta Mu Beta (Biomedical Engineering Honors Society)
- International Baccalaureate Diploma 2013

Athletics
- Division I Athlete at Boston University: Cross Country/Track
- 2016 and 2017 Patriot League Indoor Conference Champion
- USTFCCCA All-Academic Team (2016).

Honors & Awards
- Boston University Presidential Merit Scholarship
- 2016 and 2017 Corvais Patriot League Men’s Scholar-Athlete of the Year
- Eagle Scout achieved December 2011

Work Experience
- Laboratory Assistant at Boston University Hearing Research Center (2015-2017).
  - Work Skills: Modeling and MATLAB Analysis, Experiment Design
- Algorithm Implementation Summer Internship at Knowles Electronics (2016).
  - Work Skills: MATLAB and Python Coding

References
- Bruce Lehane (College Cross Country/Track Coach)
  blehane@bu.edu    (617)-353-6092
- H. Steven Colburn (Director of Boston University Hearing Research Center)
  colburn@bu.edu    (617)-353-4342
Micheal Gutman
10 Buick Street Boston, MA 02215
808-203-3887
mgutman8@gmail.com
https://www.linkedin.com/in/michael-gutman-576bb786

Professional Summary
Hard-working engineering student interested in obtaining a biomedical entry level position, offering critical thinking and leadership skills to help generate innovative ideas and gain experience in the field whilst making connections in the industry.

Education
Boston University
Bachelor's Degree, Biomedical Engineering
2013-2017
Captain of the Epee Squad, Treasurer of the Organization of Pakistani Students

Northwest Missouri State University
Associate's Degree, General Science
2011-2013
On-Campus Representative for Student Senate, Secretary for the Robotics Team, Model UN chair

Professional Experience
Boston University January 2016 - Present
Media Assistant
● Assisted faculty with technology needs. This included editing and transferring media files into different formats, checking university technology out to faculty and students, and assisting faculty in setting up projectors and other IT troubleshooting.

Sweetwater Pools May 2014 - August 2015
Head Lifeguard Manager
● The head lifeguard is responsible for the management of the pool and setting the schedules of the junior lifeguards. Furthermore, the head lifeguard is responsible for the pool maintenance and simple repairs.

Core Competencies
● Programming and Engineering

Projects
● Truss Design-My team and I designed, analyzed, constructed and tested a Truss using a Matlab program we programmed.
● EOG Mouse Cursor-My partner and I created and tested an eye controlled mouse cursor using EOGs and LabVIEW.
● Cloning E.Coli. with GFP-My partner and I took a colony of E.Coli and inoculated it with Green Fluorescent Protein with a plasmid vector. We then cloned the colony and measured how the fluorescence in order to determine how successful we were.
● Kitchen Timer using Verilog-My partner and I designed and implemented a finite state machine that acted as a kitchen timer. The user decided whether the timer counted up, reset, paused and counted down.

Computer & Software Skills
● Matlab
● Java
● Python
● C++
● Verilog
● General Windows and Microsoft office competency
● LabVIEW
● WolfRAM
JORDAN LYNNE HABURCAK
1139 Commonwealth Ave. #45 Boston, MA 02134
(302) 750-3247 ● jhab@bu.edu

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science, Biomedical Engineering May 2017
GPA: 3.5

EXPERIENCE
Health Policy Associates, INC. Westwood, MA
Business Development Intern Jan 2017-Present
- Creating a dynamic digital workflow for HPA Inc.’s sales team
- Coordinating email marketing campaigns for a variety of therapeutic areas
- Creating a Salesforce database for the sales team to increase efficiency

Fraunhofer USA Center for Manufacturing and Innovation Boston, MA
Biotechnology Engineering Assistant Jun 2015-Present
- Developing and testing both a device and protocol for point of care diagnosis of infections
- Researching and applying optimal specimen collection techniques to maximize usable cultures for disease detection
- Analyzing and presenting original experimental data and findings weekly

Dr. Sandhya Shah and Dr. Anjan Chaudhury OBGYN Brookline, MA
Medical Office Administrator & Nurse’s Assistant Sept 2016-Jan 2017
- Managing administrative tasks for two physicians across three offices
- Taking patient histories and relaying information to physicians
- Completing all insurance, billing, and personal paperwork for patients

Caffe Gelato & Harry’s Seafood Grill Wilmington, DE
Restaurant Manager & Hostess Mar 2012-May 2015
- Assisting in the day to day operations of the restaurant in order to maintain an organized work environment for employees
- Coordinating implementation of OpenTable dining software to streamline guest reservations and restaurant operations, resulting in increased satisfaction of employees and guests
- Resolving customer concerns and complaints

LEADERSHIP EXPERIENCE
Founding Executive Member of Theta Tau Professional Engineering Fraternity Feb 2014- Present
National Committee Member, Chapter Vice President, Treasurer, and New Member Educator
- Leading 15 undergraduates in a ten week professional development class
- Managing 11 chairpersons and assisting them in program planning
- Strategizing and implementing a multiyear plan for new member growth and development resulting in growth from 17 members to 68 student members and 19 alumni in three years
- Revising current training methods to further the success of new chapters and colonies across the country

Engineering Student Government Executive Treasurer Aug 2013-Present
- Managing a $15,000 budget for the entire College of Engineering to participate in events such as National Engineers Week and Spring Formal

SKILLS
Computer: Microsoft Office Suite, MATLAB, Salesforce

INTERESTS
- Mentoring Little Brothers in my fraternity on topics such as academics and professional development
- Playing trivia with friends
Objective A position in a technology or biotechnology based firm focusing on strategy, consulting, or sales.

Education Boston University College of Engineering, Boston, MA
B.S., Biomedical Engineering, May 2017
Concentration, Technology Innovation

Relevant Coursework:
Signals and Systems, Control Theory, Thermodynamics, Optical Microscopy,
Medical Imaging, Biomaterials, Business Technology Innovation,
Strategy for Technology Based Firms

Projects

Sleep Posture Monitor for Heart Failure Patients September 2016-Present
- Researched the factors of sleep that are different between healthy patients and patients with congestive heart failure.
- Designing a product that monitors sleep and analyzes data in MATLAB.
- Writing an application to analyze the data from the sleep monitor in order to notify a physician if there is a high risk factor for the patient.

Neonatal Vitals Monitor September 2016-Present
- Designed and built a neonatal vitals monitor for low-resource settings.

MATLAB EOG Cursor Fall 2015
- Designed, coded, and implemented a computer cursor function in MATLAB using EOG signals.

Speaker Spring 2014
- Built a stereo speaker

Skills Laboratory: mass spectrometer, optical microscopy, fluorescent microscopy,
oscilloscope function, PCR, gel electrophoresis, DNA replication
Computer Applications: MATLAB, ImageJ, MS Office, Adobe InDesign, eClinical
Languages: English, Arabic spoken fluently not written

Experience Hanna MD/PC Marshfield, MA 2008-Present
- Managed office computers network and systems
- Utilized eClinical Works software to digitize patient histories
- Set schedules and appointments, and answered phone calls
- Dealt with any issues a patient had from a non-medical standpoint

Associations Boston University Club Golf
- Member since Fall 2012
- President since Spring 2016

Deans’ Host Spring 2013-Spring2014
- Conducted tours with prospective students and parents
- Led informational sessions for parents and students
EDUCATION
Boston University, College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering; Concentration in Nanotechnology
GPA: 3.49/4.00; Cum Laude
May 2017

RESEARCH EXPERIENCE
Boston University and Beth Israel Deaconess Medical Center, Biomaterials Laboratory
Research Assistant
Fall 2014 - Present
Boston, MA
- Investigated material properties of polymer lubricants for treatment of osteoarthritis
- Developed novel method for lubricant friction testing using 3D printed components

Cleveland Clinic, Biomedical Engineering Department
NSF Funded REU Research Assistant
Summer 2016
Cleveland, OH
- Evaluated the role of TSG-6 protein on the inflammatory response
- Analyzed the effect of neutrophil infiltration on skin wound healing through histochemistry

Xavier University of Louisiana, Chemistry Department
NSF Funded REU Research Assistant
Summer 2015
New Orleans, LA
- Identified amino acid interactions of Liver X Receptor through computational analysis
- Performed glycine scanning and scaffold replacement models for possible synthetic alternatives

ENGINEERING PROJECTS
Examining Muscle-Bone Crosstalk: Design of Muscle Trauma Model for Study of Stem Cell Recruitment in Injury Repair, Senior Design
September 2016 - Present
- Repurposed a fracture device to induce reproducible muscle contusions of variable severities
- Analyzed cellular migration during bone and muscle regeneration

Neonatal Vital Sign Monitor for Low Resource Settings
September 2016 – December 2016
- Created a low cost infant monitoring device to reduce infant mortality
- Developed FDA and IRB approval plans for the temperature and heart rate sensors

POSTER PRESENTATIONS
* Received 2nd Place Poster Award

* Received 1st Place Poster Award

HONORS AND AWARDS
- Boston University Undergraduate Research Opportunities Program grant recipient (Four semesters)
- Half Tuition Presidential Scholarship and Engineering Scholars Award under Boston University
- Student Representative for the College of Engineering Academic Conduct Committee (Four semesters)

LEADERSHIP AND AFFILIATIONS
Engineering Student Government – Executive Board President (2016); Class President (2015); Class Secretary (2013-2014)
Biomedical Engineering Society at BU – Vice President (2016); Recording Secretary (2015)
Kappa Alpha Theta – Chief Recruitment Officer (2015)
Community Service Center at Boston University
- First Year Student Outreach Program – Staff Leader (2014-2016)
- Alternative Service Break Program – Coordinator for Omaha, NE trip (2015)
Engineering Dean’s Host
2013-Present
Ashley L. Hartman
33 Harry Agganis Way, Boston, MA 02215 • (484) 896-0396 • ahartman@bu.edu • www.linkedin.com/in/ashley-hartman

EDUCATION
Boston University College of Engineering, Boston, MA
• Bachelor of Science in Biomedical Engineering May 2017
Universidad Autonoma de Madrid, Madrid, Spain Spring 2015
• Semester-long Study Abroad Program, 20 Credits

Relevant Coursework
• Bioinformatics, Device Design and Diagnostics, Transport Phenomena, Business Technology Innovation, Electronics, Signals and Systems, Control Systems, Biomedical Measurements

Skills
• Patent Analysis, Data Analysis, Technical Writing, Python, MATLAB, Cell Culture, Circuit Analysis, Logic Design

WORK EXPERIENCE
Associate June 2017
Global Prior Art Boston, MA
• Technical and Intellectual Property assessments of diverse biomedical technology related topics, in support of licensing, prior art, R&D planning, patent analysis, and product development efforts

Patent Analyst June 2016 - Current
Blackbird Technologies Concord, MA
• Review and analyze patents in the engineering and computer science fields.

Technology Consultant June - August 2016
Paytronix Systems, Inc. Newton, MA
• Analyzed big data in Excel and Salesforce to improve employee time management on small clients; presented findings to company executives
• Updated and created tools in Python and Java to automate large data imports
• Generated wireframes and collaborated with a team to create a user-friendly support website for clients

Laboratory Assistant September 2014 - May 2016
Biomimetic Materials and Tissue Engineering Research Laboratory at Boston University Boston, MA
• Implemented techniques involving the creation of cell sheets for the development of a vascular patch.
• Collaborated with Saudi Aramco in pursuit of advanced technologies to create liquid flow through rock.
• Awarded Undergraduate Research Opportunities Program (UROP) Grant for the Spring 2016 Semester

Validation Engineering Intern June - August 2015
Secant Medical, Inc. Telford, PA
• Executed protocols and performed operational testing on a multitude of medical device equipment.
• Carried out the re-validation process during a company relocation.

Museum Educator 2014 - 2015
Da Vinci Science Center
• Lead educational programs and hosted fundraising events for this non-profit organization.

LEADERSHIP POSITIONS
Dean's Host, Boston University College of Engineering September 2014 - Current
Society of Women Engineers (SWE), Boston University | Member September 2013 – Current
EDUCATION
Boston University College of Engineering, Boston, MA
Biomedical Engineering
Bachelor of Science candidate, May 2017

Universidad Autónoma de Madrid, Madrid, Spain
Semester Study Abroad Program
Spring, 2015

Relevant Coursework

PROJECTS
Facet Joint Motion in Healthy and Degenerated Spines
• Used time-lapsed images of cadaveric spines, specifically of the thoracic region, to design a method to quantify the displacement of facet joints that underwent mechanical loading.
• Images of the initial time steps for each sample were loaded into the Amira program and contoured to create 3D models of the vertebra.
• A MATLAB code was developed to align the 3D model onto the images. This code outputs a transformation matrix and through an algorithm the displacement is obtained.

Reinvention of an Epinephrine Drug Delivery Device
• Group project reinventing an emergency epinephrine delivery device.
• Assessing the current solution, ideating new designs and approaches, and prototyping a new product.

Effect of Heart Rate on Rate of Recovery from Minor Hypoxia
• Group project to design an experiment to investigate the effect of heart rate on the rate of recovery from minor hypoxia.
• Conducted trials with multiple subjects, used a pulse oximeter to obtain data, and LabView to display it.
• Wrote a lab report analyzing the data, and then presented the results to the class.

EXPERIENCE
Administrative Assistant, Boston University Office of Disability Services, Boston, MA
Spring 2016-present
Oversee and assist with office organization and logistics. Facilitate scheduling between directors and students, ensuring needs are met.

Research Assistant, Brain and Vision Laboratory Boston University, Boston, MA
Summer 2016
Researched the affect of strokes and concussion on the human brain. Administered computer simulations to patients that tested the brain’s function and the improvement over the course of several sessions.

Sales Associate, Fenway Team Store, Boston, MA
Summer 2016
Responsible for customer service, cash register, restocking the sales floor, and changing the floor set.

Research Lab Assistant, Boston University Work Study
Fall 2014
Independent lab work focused on neural systems, specifically organization of the prefrontal cortex. Tasks included capturing images of brain slices, overlaying them, and conducting further analysis via the computer program, ImageJ.

SKILLS
Computer: MATLAB, Microsoft Office, ImageJ, Python
Laboratory: Signal processing (e.g. use of oscilloscopes, signal generators, electric circuits, amplifiers, filters, etc.), solution preparation, titration, PCR, cell culture, gel electrophoresis
Linguistics: Conversational Spanish (Castilian)

ACTIVITIES/VOLUNTEER SERVICE
Boston University Dean’s Host, 2014-present
Vice President, BU Club Ultimate Frisbee, 2016-2017
BU Club Ultimate Frisbee, 2014-present
Silver Lake Conference Center Counselor, 2014-present
Society of Women Engineers, 2013-present
Habitat for Humanity, 2009-2015
Kevin Shih-Ting Huang
4295 Cherrywood Drive, Troy, MI 48098 ♦ kevin221@bu.edu ♦ (248)-835-8108

EDUCATION

**Boston University College of Engineering,** Boston, MA May 2017
Bachelor of Science in Biomedical Engineering

EXPERIENCE

**Boston University College of Engineering,** Boston, MA January 2015 – Present

*Biomimetic Materials Engineering Lab Undergraduate Research Assistant*

- Utilizing amniotic and chorionic placental mesenchymal stem cells with the goal to fabricate a scaffold-less cell sheet equipped with the phenotype of human tissues.
- Participant of the 2015 and 2016 Summer Undergraduate Research Opportunities program.

**National Taiwan University Institute of Biomedical Engineering,** Taipei, Taiwan June 2014 -July 2014

*Orthopedic Engineering and Movement Analysis Lab research intern*

- Conducted 3D visualization using the Amira software for knees images taken by MRI.
- Assisted in the calibration of subject joint movements recorded via Vicon motion capture software.

Projects

- **Senior Design Project: 3D-Bioprinting For Tumor Engineering**
  - Developing novel transmembrane insert free air-liquid interface via 3D bioprinter for effective epidermal tissue.
  - Generating effective vasculature in conjunction to develop viable melanoma tumor tissue for experimentation.
  - Designing new complementary dispensing components to adapt to the updates from the 3D bioprinter.
  - Optimized 3D bioprinting strategies accommodating the updated 3D bioprinter.

- **Device & Diagnostics Design: Anesthesia Delivery and Monitoring Device in Low-Resource Settings**
  - Development of a portable adaptor to provide accurate heart rate, O₂ and CO₂ readings.
  - Product is intended to be compatible with any laptop and cell phones using USB connectors.
  - Adaptor will be capable of provide dosage recommendations based on inputs of patient conditions.
  - Designed CAD imaging of the adaptor using SolidWorks.
  - Co-developing a novel software using Arduino processors for the smart response and monitoring component.
  - Conduct interviews for determining primary stakeholder needs and market interest in product.

- **Product Design and Innovation: Non-Invasive Fetal Heart monitoring Device**
  - Virtual development of a novel fetal heart monitoring device for low-resource communities.
  - Device will be capable of capturing ultrasound images over a wider surface area with the transducer plate design.
  - Researched primary stakeholder needs and the current market need for the designed product.

Team/Leadership

**Boston University Society of Asian Scientists and Engineers,** Boston University 2013-2015

*Public Relations (Spring 2015), Membership/Mentorship Chair (Fall 2015)*

- Co-developed a joint mentorship program with the Boston University Asian Student Union to provide underclassman with the proper support and guidance during their time at Boston University.
- Hosted the SASE Northeastern Regional Conference:
  - 500+ attendance from SASE members throughout the NE region
  - 20 corporate sponsors including GE, Draper Laboratory, Accenture, P&G, etc.,

SKILLS

- **Language:** Fluent in Mandarin; proficient in Taiwanese.
- **Computer:** Proficient with Word, PowerPoint, MATLAB programming language. Has basic understanding of excel, SolidWorks, AutoCAD, and have previously used Amira 3D software and Vicon motion capture software.
- **Laboratory:** Has experience with ELISA, FTIR, S100 brightfield and fluorescent image studies, 3D Bioprinting, and essential BLS-2 cell culture protocols and procedures.
EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science, Biomedical Engineering May 2017
BU GPA: 3.37/4.00; Dean’s List (Five Semesters)

SELECTED COURSEWORK
Engineering Graphics and CAD, Systems Physiology, Control Systems, Signals and Systems, Cell and Molecular Biology, Human Infectious Diseases, Providence Improv Guild IMPROV, Trinity Repertory Acting for Non-Actors

ENGINEERING PROJECTS
SoundMedicine Pneumonia Diagnosing Device, Senior Project Fall 2016 - Present
● Designs a microphone bell in Solidworks for 3D printing and develops an app in Android Studio that stores audio and accelerometer data for the purpose of diagnosing pulmonary health

Sleep Stage Identification EOG/Matlab Program Spring 2015
● Plotted EOG data and identified REM stages to realize trends and detect amount of sleep occurring during REM sleep stage

CPU Usage GUI/Matlab Program Fall 2013
● Monitored and interpreted computer performance by plotting, saving, curve fitting, and statistically analyzing CPU Data

SKILLS
Computer: Matlab, CAD (Autodesk Inventor. NX8, Solidworks, Creo), LabView, Microsoft Office, NC Mill, Shell
Laboratory: Chromatography, Gene transference via plasmids, Sterile Technique, Slide preparation, Extraction, Distillation

WORK EXPERIENCE
Boston University Zaman Cellular and Molecular Dynamics Laboratory Summer 2016 - Present
Undergraduate Research Assistant, Collagen Network Stress-Strain Simulation
● Operated rheology simulation to discover stress-strain trends in networks for various forces and parameters
● Programmed MATLAB script to calculate accompanying complex modulus, storage modulus, and loss modulus for rheology simulation

Woods Hole Oceanographic Institute Summers 2011 & 2012
Mechanical Engineer’s Assistant, Applied Ocean Physics & Engineering Department Falmouth, MA
Deep Sea Submergence Vehicle (DSV) Alvin
● Measured syntactic foam parts for hull and attended test runs
● Converted blueprints into parts and assemblies on Autodesk Inventor
● Profiled parts and assemblies into worksheets and water-jets on Autodesk Mechanical Desktop

Office Work
● Researched buoy sensors in order to systematize part files by company
● Ordered and took stock of parts using Autodesk Vault
● Systematized parts and assemblies by company and project in Autodesk Vault

ZenLinks 2011-Present
Founder Martha’s Vineyard, MA
● Designs, manufactures, and markets custom handmade chainmaille jewelry through art fairs, home shows, and Etsy.com

LEADERSHIP, COMMUNITY ACTIVITIES AND AFFILIATIONS
Member, Tau Beta Pi (ENG Honor’s Society) 2014-Present
Member, Alpha Eta Mu Beta (BMed Honors Society) 2014-Present
Member, Biomedical Engineering Society 2012-Present
Member, Society of Women in Engineering 2012-Present
Volunteer, Boston University Student Food Rescue 2012-Present
Leader, RPI First Year Emerging Leaders Program 2012
Secretary, Chinese American Student Association 2012
EDUCATION
Duke University Pratt School of Engineering
Master of Science: Biomedical Engineering
Durham, NC
Dec, 2018

Boston University College of Engineering
Bachelor of Science: Biomedical Engineering
Boston, MA
May, 2017
GPA: 3.42

Universidad Autónoma de Madrid
Semester-long Study Abroad Program
Madrid, Spain
Spring, 2015


PROJECTS
Senior Project
Fall, 2016 to present
Obtain time-lapsed images during mechanical testing of cadaveric spines. Quantify the displacement across the facet joints and rotation in spine alignment to better understand the biomechanical and physiological functions of the facet joints. Analyze data to determine the relationship between the displacement and the severity of spine osteoarthritis to facilitate future research on discovering a method that can help prevent or better manage osteoarthritis in the spine.

Anesthesia Project
Fall, 2016
Design a low-cost, accurate, and easy-to-use anesthesia administering and monitoring system specifically for low resource settings. Prototype an adaptor that converts EKG signals, oxygen saturation levels, and blood volume into readable data and displays it on a monitor to ensure patient is stable.

Glucose Monitoring Project
Fall, 2016
Design a continuous, noninvasive glucose monitoring device through meeting clinical needs. Propose product development process with device requirements and specifications. Plan the design and manufacturing, verification and validation testing, risk management, and clinical studies for the device. Understand applicable national and international standards and FDA regulatory requirements.

EXPERIENCE
Research Intern, Repligen Corporation
Summer, 2016 to Winter, 2016
Perform lab scale fedbatch and perfusion bioreactor operation and engineering scale-up/down to demonstrate performance of ATF/TFF system and growth factors in industrial CHO cell culture applications. Participate in single-use product development and conduct product mechanical testing, characterization, and qualification studies. Perform application study design and data analysis, write summary report, and present findings.

Library Assistant, Boston University
Spring, 2014 to present
Assist in administrative duties, computer data entry, and research assistance.

SKILLS
Computer: Microsoft Office, MATLAB, Verilog, LabVIEW, ImageJ, SolidWorks, AMIRA
Linguistics: Spanish-intermediate proficiency (Castilian), Latin-fluent (reading, writing)
Laboratory: Signal Processing (e.g. use of oscilloscopes, signal generator, amplifier, filter, etc.), Gel Electrophoresis, Bacterial Cell Culture, Polymerase Chain Reaction, Aseptic Techniques, NMR Spectroscopy, IR Spectroscopy, Thin Layer Chromatography, Chemical Purification, Recrystallization, ELISA

LEADERSHIP & VOLUNTEERING
Society of Women Engineers
Spring, 2013 to present
Secretary: Launch mentoring program, help plan and set up biweekly events, update social media accounts, and send weekly newsletter updates.

Dean’s Host, Boston University College of Engineering
Fall, 2014 to present

Biomedical Engineering Society: Member
Fall, 2013 to present

BU Club Ice Hockey: Goalie, Captain, Treasurer
Fall, 2013 to present
Focused and driven to apply the engineering knowledge and skills I have attained while in school to a real-world setting. Looking forward to adapting my diverse work experiences to bring about a positive and effective change in the workforce.

**Education**

BOSTON UNIVERSITY, Boston, MA  
*College of Engineering* | 2013-2017

- **Major:** B.S. in Biomedical Engineering | **Cumulative GPA:** 3.6/4.0 - Cum Laude – Dean's List Recipient
- **Related Projects:** Exploration of Lubricity in Transcatheter Delivery Systems, BrisBATH: Surgical Instrument Sterilization Enhancing Unit

WILMINGTON HIGH SCHOOL, Wilmington, MA  
2009-2013

- Graduated 3rd out of 224 | Class Essayist

**Experience**

LIBERTY MUTUAL INSURANCE, Boston, MA  
*Analytics Development Program Summer Intern* | 2015, 2016

- ADP intern in product management for commercial insurance spending one summer in the commercial auto and commercial multi-peril lines of business teams and another summer in the state management countrywide team.
- **Related Projects:** Industry deep dive into company performance in the residential condominium space by evaluating historical data and presenting motivation for future profitability.

BOSTON UNIVERSITY, Boston, MA  
*Engineering Resource Tutor* | 2015-2017

- Aid engineering students with their school work, requiring a broad range of knowledge in various subjects

BOSTON UNIVERSITY, Boston, MA  
*Library Assistant* | 2013-2017

- Oversee operations in the scan and copy center as well as provide administrative duties

AMERICAN TAEKWONDO ASSOCIATION, North Reading, MA  
*Head Instructor* | 2008-2014

- Taught taekwondo to students of all skill levels from ages 4 to 60+, instructing both self-defense and encouraging self-confidence.
- Provided personal training to regional and world class competitors

**Skills and Awards**

- **Languages:** Conversational Cantonese
- **Technical:** Excel – Intermediate, PowerPoint – Intermediate, Python 3.3 – Beginner
- **Leadership:** Outstanding Leader of the Year (2010-2012), National Trainee Instructor of the Year (2012)

**Activities**

- Engineering Student Advisor | 2015-2017
Tadafumi Clark Ikezu
tcikezu@bu.edu, (339) 223-2153, 2 Barrett Road Lexington, MA 02421

Objective Statement: To pursue further applications of computational modelling to investigate physical mechanisms of computation in biological systems.

Career Objective: I am a senior studying Biomedical Engineering, expected to graduate this May. I have modelled chemical receptor kinetics and electrophysiology of grid cells of rat, and designed software for behavioral assays of D. Melanogaster larvae. My current objective is to study the physics of computation in biological systems at a graduate program in bioengineering.

Experience

Summer 2016
Undergraduate Scholar for Marta Zlatic, Janelia Research Campus (HHMI), Ashburn, VI.
Behavioral analysis of D. Melanogaster larvae. Investigated association between environmental-sensory and proprioceptive cues, and short-term, long-term learning modes with optogenetic closed-loop system.

Summer 2015 - Present
Research assistant for Michael Hasselmo, Boston University, Boston, MA.
Modelled GABAergic fast-spiking inhibitory cells of rat medial septum and stellate cells of rat medial entorhinal cortex for the formation of grid cell firing fields with MATLAB software.

Fall 2014 - Spring 2015
Research assistant for Adrian Whitty, Boston University.
Modelled internalization, degradation of RET-Tyrosine Kinase with DynaFit system biology tool and Python.

Summer 2012
Research volunteer for Anurag Singh, Boston University.
Observed culturing of cancer cell lines, performed DNA miniprep, Western-Blot, DNA gel electrophoresis, and sorted lab equipment including antibodies and cryopreserved cells.

Technical Skills
MATLAB, Python, Java, C++, Robot Operating System (ROS)
Microsoft Office, LibreOffice
Windows, Mac, Linux

Education

2013 - 2017
Boston University, Boston, MA.
B.S. Biomedical Engineering
GPA: 3.73
To participate in research leading to cutting-edge discovery and innovation in medical technology, synthetic biology and biotechnology.

**Skills Profile**

**Computational:** Proficient in MATLAB, Python, Solidworks, ImageJ, Microsoft Office, Photoshop.

**Wetlab:** microfluidics, next-gen seq, protein purification, DNA recombination, mammalian cell-culture/assays, FRAP, FRET, Confocal, etc.

**Other:** Experienced with optics equipment, including optical positioning apparatuses, optical fiber couplers and cleavers. Proficient with shop equipment including bandsaws, scrollsaws, drill presses, and belt sanders.

**Education**

**Boston University 2013-2017 (projected)**

- **Boston, MA**
- **GPA:** 3.63
- **Major:** Biomedical Engineering
- **Presidental Scholar**
- **Dean’s List (Fall 2013-present)**
- **Tau Beta Pi Engineering Honors Society**
- **Alpha Eta Mu Beta-Biomedical Engineering Honors Society**

**La Cueva High School 2009-2013**

- **Albuquerque, NM**
- **GPA:** 4.885
- **Salutatorian (class of 450)**
- **Completed 13 of 14 APs offered by school, and every AP math and science course offered by College Board**
- **National AP Scholar, Highest AP rank awarded by the College Board**

**National Emerging Infectious Diseases Laboratory (NEIDL) 2015-present**

- **Boston, MA**
- **Building a cell-free molecular biosensor to detect climate change-induced coral stress metabolites by exploiting microbial enzyme pathways. Working under Dr. James Galagan.**

**Berkeley Lights, Inc Summer 2016**

- **Emeryville, CA**
- **Designed pump-free media perfusion system for lab-on-a-chip cell culture applications under Dr. Troy Lionberger. Designed with Solidworks, tested prototype in wetlab, and managed budget of $8,000. Proficient with BLI Beacon advanced nanofluidic platform.**
- **Pending patent.**

**Sandia National Laboratories Summers of 2014, 2015**

- **Albuquerque, NM**
- **Encapsulated microtubules in silica sol-gels for the development of versatile adjustable-strength/diffusion gels under Dr. George Bachand. Analyzed microtubule behavior using microfluidics.**
- **Pending publication.**

**Activities**

**Boston University Design Community 2013-present**

- **Executive Board: President**
- **Organizes events promoting design education on campus. Events include workshops, design challenges, and guest lectures.**

**Boston University Men’s Water Polo 2014-present**

- **Executive Board: Treasurer**
- **Competes against other Division I club teams from the New England Division. As treasurer, manages team inflow/outflow of $13,000**

**Boston University Ski Racing Team 2015-present**

Competes against other racers in the USCSA Thompson Division in Slalom and Giant Slalom events throughout VT and NH

**La Cueva Speech and Debate 2009-2013**

- **Officer: Debate Captain (2013)**
- **Outstanding Distinction National Merit Rank, second-highest rank awarded by the National Forensics League**
ARCHANA JEYARAM
archanaj@bu.edu • (862)251-3335
linkedin.com/in/archanajeyaram

EDUCATION
Boston University College of Engineering | Boston, MA
Bachelor of Science in Biomedical Engineering May 2017
Minor in Mechanical Engineering

Joseph Fourier University | Grenoble, France
Studied abroad at a leading French university for science, technology, and health Spring 2015


SKILLS
MATLAB, Objective C, X-Code, Microsoft Office, SolidWorks, LabView

ENGINEERING PROJECTS
Senior Design Project, Grinstaff Group & Snyder Group September 2016 – Present
• Working in a team of three students as a part of the Grinstaff Group at Boston University and the Snyder Group at the Center for Advanced Orthopaedic Studies, Beth Israel Deaconess Medical Center
• Synthesizing and characterizing bio-lubricants based on rheological properties
• Conducting mechanical wear and friction tests for polymer optimization in preventing osteoarthritic articular cartilage wear

• Developed problems statement, conducted interviews, and created business models
• Prototyped an Arduino-based device that addresses the needs while taking into account possible constraints
• Conducted FMEA and determined FDA regulatory pathways

• Implemented sustainable water filtration system and latrines with community in Naluja, Zambia and created education materials to promote hygiene and sanitation efforts
• Prototyped models of the Bio-Sand Filter and latrines to determine optimal design using supplies that can be found in the community
• Led a team of students as co-tech lead in accomplishing project goals

Eye Movement Tracker for Use in the Assessment of Poster Ads October 2015 – December 2015
• Designed and developed an EOG-based eye movement tracker device in a team of four students
• Drew conclusions on how people look at advertisements based on the data collected

EXPERIENCE
Regulatory Intern, Navitas LLP | Chennai, Tamil Nadu, India June 2016 – August 2016
• Trained in FDA drug approval/clinical trial processes and worked on submissions/publishing
• Rewrote department SOPs in collaboration with manager and developed presentation for new employees

Intern, Beth Israel Deaconess Medical Center | Boston, MA June 2015 – August 2015
• Revised mobile application code for rapid orthopaedic consultations between level I trauma centers and healthcare providers and submitted to App Store for approval
• Designed website and made instructional video for the application

LEADERSHIP and AFFILIATIONS
Society of Asian Scientists and Engineers (SASE) at BU, President September 2013 – Present
• Oversee all club operations and execute initiatives in collaboration with board and national/regional teams
• Previously served as Secretary, Public Relations Chair, Freshman Representative

BU College of Engineering, Student Advisor May 2015 – Present
• Mentor first-year students and lead weekly seminar

Engineers without Borders-BU (EWB-BU), Technical Lead September 2013 – May 2016
• Led efforts in developing timeline, reaching goals, and facilitating communication between teams
• Previously served at Social & Networking Chair

BU College of Engineering, Dean’s Host and Engineering Ambassador January 2014 – Present
Biomedical Engineering Society (BMES) at BU, Member September 2013 – Present
Profile

Eager and ambitious student ready to obtain an entry-level position to put to use organizational skills, as well as critical thinking and clear communication to be a helpful and efficient force wherever needed.

Experience

Boston University Human Resources Office, Administrative Assistant  
October 2014 – Present
- Organized, scanned, and archived an assortment of files within the Benefits department of Human Resources
- Assembled and sent out mass mailings for Boston University employees and faculty
- Put together orientation packets for newly hired employees
- Miscellaneous office tasks

University of Colorado – Denver, Research Assistant  
June 2016 – August 2016
- Worked closely with a professor in the Bioengineering department in her Optical Microscopy and Spectroscopy lab
- Helped develop a closed-loop circuit with LabVIEW to monitor brain waves of mice using an olfactometer
- Attended lab meetings to share findings as well as discuss ways to help resolve issues that were encountered

Catering on the Charles, Server  
March 2014 – May 2014
- Worked as part of a team in a fast-paced environment
- Had to respond quickly to customer and client demands
- Was able to adjust service quickly and efficiently

Education

Boston University  
Bachelor of Science in Biomedical Engineering  
2013-2017

Senior design project focused on engineering nanoparticles for cancer immunotherapy application. Liposomes were created with a protein, lipids, and ovalbumin, a model antigen to activate B cells with the goal of killing melanoma cells.

Skills

- Spanish (elementary level)
- Familiar with OnBase, Matlab, LabVIEW, and some SolidWorks experience
- Loves to work within a team, but can also be self-directed
- Willing to learn new skills in order to carry out the task at hand correctly
- Maintains positive attitude

Interests

Always ready for a pick-up soccer game, traditional Filipino dance, and is an avid Denver Broncos fan
Teja Karri
6A Canterberry Court, Hudson, NH 03051
(603)-921-7132 | tkarri@bu.edu

EDUCATION

Boston University College of Engineering, Boston, MA

Bachelor of Science in Biomedical Engineering
GPA: 3.81/4.00; Dean’s List (All Semesters)
Honor Societies: Tau Beta Pi (Engineering), Alpha Eta Mu Beta (Biomedical Engineering)

EXPERIENCE

Synthetic Biology Research Assistant
May 2016 – Present
Boston University, Khalil Lab

- Created coding infrastructure for the eVOLVER, a high throughput turbidostat used for experimental evolution, in collaboration with Ph.D lead.
- Designed system that emphasizes modularity in implementation and calibration of sensors.
- Programmed an automated process to obtain, exchange, and transport samples between turbidostat units.

Boston University Resident Assistant
May 2016 – Present
Boston University

- Provide accurate and timely information in a team environment to navigate through complex needs of a community for smooth and efficient action.
- Ensured safe environment emphasizing mutual respect, cooperation, and trust for the residents.
- Assisted residents personally and with appropriate resources to diffuse personally stressful situations or conflicts.

ENGINEERING PROJECTS

Neonatal Vitals Monitor
August 2016 – Present

- Creating a cost-efficient reusable-disposable hybrid system for vitals monitoring for high-risk newborns.
- Implementing a reflectance based pulse oximeter and ECG electrodes to monitor vitals.
- Designing a platform to perform chest compressions and intubation.

Communication Using Ocular Motion
February 2016 – May 2016

- Created software that allows subjects to communicate by ocular motion using EOG.
- Ensured that the ocular motion can be calibrated to work on any computer monitor at seated distance.
- Enhanced software for consistency and minimized noise perturbation by 20%.

SKILLS

Additional: Python, MATLAB, C++, UNIX, Java, and SolidWorks

COMMUNITY ACTIVITIES AND AFFILIATIONS

Massachusetts General Hospital Volunteer
October 2015 – August 2016

- Directed and transported patients to specific medical units.
- Ensured patient satisfaction with interactions to unify a holistic experience at hospital.

Southern New Hampshire Hospital Volunteer
August 2011 – August 2013

- Transported patients, medical equipment, and biological samples across hospital.
Elizabeth Kenny  |  339-227-3270  |  erkenny@bu.edu

EDUCATION

Boston University College of Engineering  Boston, MA
Bachelor of Science in Biomedical Engineering  May 2017
Minor in Computer Engineering

Université Joseph Fourier  Grenoble, France
Semester-long Study Abroad Program  Spring 2015


PROJECTS

Self-Actuated Treadmill Algorithm  Fall 2016 – Spring 2017
- Assumed role of Software Engineer in Senior Design Project to develop a control algorithm to automate the acceleration profiles of an instrumented treadmill to simulate natural walking and running sessions
- Integrated real-time signal acquisition and live data processing of force plate measurements in Simulink with C and C++ based libraries for TCP networking routines to form a PID-based control system

App-Controlled Fun Hat  Spring 2016
- Collaborated with fellow Engineering students to design and assemble circuitry for a light-up, “singing” hat controlled by an MSP430 microcontroller programed in C, controlled via Bluetooth by an Android app
- Generated an algorithm in C for the system’s audio component to control pure-tone frequency outputs for different states of the Hat

Study of Pulse Oximetry and Nail Polish  Fall 2015
- Designed an experimental method using LabVIEW with a team of Biomedical Engineering students to measure and quantify the effects of nail polish color on a pulse oximeter’s measurement of blood oxygen saturation
- Produced a MATLAB program to manipulate and display data for statistical analysis

Snake App  Summer 2015
- Developed an app modeled after the classic game Snake; adapted it as a desktop application with C++ and object-oriented programming techniques using SFML development tools and graphics libraries

SKILLS

Laboratory: Fluorescent Microscopy, Spectroscopy, Circuit Design, PCR, Cell Culture, Gel Electrophoresis
Languages: Italian, advanced; French, intermediate; Spanish, intermediate

EXPERIENCE

Systems Engineering Intern  Summer 2016
Intertech Engineering Associates, Inc.  Westwood, MA
- Assembled an electroacoustic calibration device and validated the accompanying hardware prior to performing formal testing and verification of hardware and software components with respect to project requirements
- Contributed to official documentation to guide users through a system’s embedded software configuration
- Wrote and executed test cases to validate software requirements for an imaging-based medical device while collaborating with V&V project managers to ensure compliance with FDA medical device regulations

Systems and Operations Associate  May 2014 – May 2017
Boston University International Students and Scholars Office (ISSO)  Boston, MA
- Process sensitive immigration data for BU’s extensive population of international students and scholars
- Built and managed the ISSO’s new website; transitioned data from HTML to WordPress format

LEADERSHIP & ACTIVITIES

College of Engineering Dean’s Host, since 2015
Society of Women in Engineering, member & mentor since 2013
Engineers without Borders, member since 2013
OBJECTIVE
Biomedical undergraduate with proven experience in leadership and communication skills, seeking to contribute to the innovation of a team.

EDUCATION
Boston University, College of Engineering, Boston, MA  May 2017
Bachelor of Science in Biomedical Engineering
GPA: 3.28/4.00
Related Coursework: Device and Diagnostic Design, Nanometer Scale Processes in Living Systems, Principles of Molecular Cellular Biology, Organic Chemistry 1 & 2, Systems Physiology, Introduction to Medical Imaging, Biomedical Measurements 1 & 2, Control Systems in Biomedical Engineering, Business of Technology Innovation

WORK EXPERIENCE
Electrical/Electronics Intern  May 2016 - October 2016
Agira Photonics  Boston, MA
• Chartered silicon-based polymers to evaluate material properties for use in novel solar panel technology
• Designed and performed ellipsometry experiments to characterize refractive index of seven silicon-based organic polymers
• Evaluated light transmission properties of seven silicon-based polymers
• Designed and prototyped several models for light collimation for use in phone privacy displays

Customer Service Manager  Summer 2014, Summer 2015
Logan Square Cleaners  New Hope, PA
• Managed front office operations and supervised a staff of six employees to provide customers with fast and effective service

PROJECTS
Senior Design, Flexible Paper Microfluidic Electrode  September 2016 - Present
The Klapperich Laboratory
• Worked in a team of two to design low cost point-of-care diagnostic for Hepatitis B
• Designed a flexible paper microfluidic electrode to electrochemically detect Hepatitis B DNA in simulated patient samples
• Presenting project to an audience of 150 during the Boston University Senior Design Project Conference
• Competed in Northeast Bioengineering Conference Design Competition

Adjustable Prosthetic Socket  September 2016 - December 2016
• Worked in a team of four to design and prototype a low cost, adjustable prosthetic socket for pediatric patients
• Developed several iterations of prototype based on feedback from pediatricians and prosthetists

• In collaboration with 3 team members a business model, marketing strategy, and financial plan was developed for a police training virtual reality simulation

Molecular Cloning  January 2015 - May 2015
• Identified an unknown promoter and reproduced a specific DNA fragment in using cloning techniques and polymerase chain reaction

SKILLS
Laboratory: Ellipsometry, Potentiometry, UV/Vis Spectroscopy, Laser Cutting, ECG, EOG, 3D Printing, Cloning, PCR, Gel Electrophoresis, Prototyping, Human Centered Design
Computer: MATLAB, SolidWorks, MathCAD, Microsoft Office

LEADERSHIP and AFFILIATIONS
Club Golf Team, Boston University, Vice President  September 2014 - Present
• Organize tournaments, team practices, and team building events

Biomedical Engineering Society (BMES), Boston University  September 2013 - Present

Intramural Soccer and Basketball, Boston University  September 2013 - Present
John Jarrett Kleitz
jkleitz@bu.edu
https://www.linkedin.com/in/john-kleitz-2bb245127/

Education
Boston University, College of Engineering
Graduation: May 2017

Bachelor of Science in Biomedical Engineering

Coursework:
- Biomolecular Architecture
- Nanoscale Processes in Living Systems
- Transport Phenomena in Living Systems
- Logic Design
- Fluid Mechanics
- Heat Transfer

GRE Scores:
- Verbal Reasoning 167/170 (98th percentile)
- Quantitative Reasoning 170/170 (97th)
- Analytical Writing 5/6 (93rd)

Activities:
- Active member of Wandering Minds and BU On Broadway theater organizations at Boston University.
- Completed an apprenticeship with the Minnesota Opera under Dale Kruse.

Work Experience

Grader for EK 301 Engineering Mechanics
September 2015-May 2017

Selected due to performance in the class. Worked with the professor to provide fair and accurate grades on homework and quizzes in a timely manner.

Chef
06/15-08/15 and 06/16-08/16

Optage Presbyterian Homes and Services

Worked with other employees to prepare, apportion, and seal food. Frequently given a list of tasks to complete and strove to maximize time efficiency so as to assist coworkers. Called to aid with inventory management, facility maintenance, and unloading product when necessary.

Skills

Computer: Knowledge of PC and Macintosh formats, Matlab, Verilog, Microsoft Word, Excel, and PowerPoint

Personal: Public Speaking, Leadership, Group Work
Eugene Kwan  
1047 Commonwealth Ave Apt 503, Boston, MA, 02215  
ekwan103@bu.edu | (415) 279-8238 | https://www.linkedin.com/in/eugenekwan1

Education
Boston University, College of Engineering, Boston, MA  
Bachelor of Science in Biomedical Engineering and Electrical Engineering  
May 2017  
GPA: 3.34/4.00, Dean’s List (Two Semesters)  
Relevant Coursework: Biomaterials, Control Systems, Data Science, Electromagnetism, Electronics, Fluid Mechanics, Microcontrollers, Software Engineering, Systems Biology, Thermodynamics

Experience
HeartWare, Inc. (Acquired by Medtronic)  
Framingham, MA  
Electrical Engineer Intern  
June 2016 – August 2016  
• Designed and analyzed motor pump circuit simulations and prototype battery fuel gauge parameters  
• Participated in reviews of circuit board schematics and layouts

Boston University, Han Laboratory  
Boston, MA  
Undergraduate Research Assistant  
January 2015 – Present  
• Design mechanical and electrical components to conduct and perform animal behavioral studies  
• Create software to run studies and perform statistical analysis on acquired data

Boston University, Technology Innovation Scholars Program  
Boston, MA  
Inspiration Ambassador  
October 2014 - Present  
• Present exciting, interactive presentations to younger students demonstrating the transformative impact engineering can have on society  
• Lead mentor for the Cambridge Rindge and Latin School’s First Robotics team of 25 students

Boston University, Career Development Office  
Boston, MA  
Office Assistant  
• Office manager and first point of contact for advisors, students, and employers  
• Use strong conversational skills, quick thinking and problem-solving to ensure smooth operation of the office

Engineering Projects
Commutation Methods for Sensorless BLDC Motor (Senior Design Project)  
Fall 2016 – Present  
• Design models and tests to illustrate effectiveness of field oriented control on commutating HeartWare’s MVAD pump compared to other commutation methods  
• Design a circuit board and implement a field oriented control to drive the MVAD pump

Network Intrusion Detection System  
Fall 2016  
• Designed an intrusion detection system to recognize attacks on networks using machine learning theory

Oil Well Drill Model  
Fall 2014  
• Designed and built a model of an oil well drill for Schlumberger to analyze the effects of forward and backward whirling on drills deep underground

Water Filter  
Spring 2014  
• Worked with a team to design a water filter using materials readily accessible in Naluja, Zambia to provide a cheap, efficient source of clean water to the community in Naluja

Skills
C, C++, Eagle, LabVIEW, MATLAB, Python, SOLIDWORKS, Swift

Additional Activities
BU IEEE Student Chapter  
September 2016 – Present

Biomedical Engineering Society (BMES) at BU  
September 2013 – Present

Global App Initiative (GAI) at BU, Client Relations Associate  
September 2013 – May 2016

Red Apple Farm Market, Team Member  
July 2015 – August 2016
Monika Lee
monikal@bu.edu
3219 Cantada Ct, San Jose, CA, 95135
(408)-409-0071

Education

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering
May 2017
Dean’s List (Fall 2016)
GPA: 3.44/4.00

Boston University College of Engineering, Boston, MA
Master of Engineering in Biomedical Engineering
May 2018

Work and Research Experience

Neuro, LLC
Engineering Intern
June 2016 - August 2016
Milpitas, CA
- Built an EEG-controlled toy car for demo and development purposes and utilized it to teach students about biomeasurements and their applications
- Worked extensively in the development of an EEG measuring headband

Boston University Neural Engineering Lab, Ritt Laboratory
Undergraduate Assistant
February 2016 - May 2016
Boston, MA
- Assembled neural hyperdrives to take electrical recordings and provide optical stimulation in mouse brains

Biological Research Expedition
Student Researcher
July 2013 - August 2013
Tanzania
- Studied how the country’s ecology, sociopolitical structure, and culture affected issues related to healthcare
- Observed both modern and traditional medical practices of different peoples in the country

Engineering Projects

Real Time Muscle Movement Quantification
September 2016 - April 2017
- Built a system that integrates ultrasound technologies to collect real-time data of leg muscles during functional activities, intended to provide tools to improve therapy for individuals after stroke
- Modeled in CAD and constructed a mechanical support system for the ultrasound system and its transducer during measurement collection
- Developed a MATLAB algorithm that quantifies measurements of muscle motion from ultrasound data
- Conducted tests of system on post stroke patients under IRB approval

Thermoregulatory Surgical Blanket Prototype
September 2016 - December 2016
- Drafted and created several prototypes of a patient thermoregulatory device for use in operation rooms in a team of four students, observing biodesign practices during the process

Skills & Affiliations
- Programming Languages: MATLAB, Arduino, Java, C++, C++.NET
- Software: Microsoft office, SolidWorks, LabScribe
- Boston University Comic Arts: Member since September 2014, President from May 2015-May 2016
- CITI Certified in Human Subjects Protection: Biomedical Focus from January 2017
- Member of the Order of the Engineer since February 2017
Austin J. Lent
School Address: 10 Buick St., Box 8515 | Boston, MA 02215
Permanent Address: 315 Connemara Ct. | Mars, PA 16046
(412) 965-0741 | ajlent@bu.edu

OBJECTIVE:

Medical Device Development … An entry level position with a quality organization offering professional growth and advancement based on results.

EDUCATION:

BOSTON UNIVERSITY COLLEGE OF ENGINEERING, Boston, MA
BS Degree - Biomedical Engineering … Graduating May, 2017.
• GPA: 3.51/4.00 … Dean’s List.
• Course Highlights … Product Design and Innovation, Device and Diagnostic Design, Introduction to Software Engineering (C++ and Android Studio for app development), Algorithms (C++), Biomedical Measurements, Systems Physiology, Electric Circuits.
• Activities … Vice President (previously Treasurer) – Boston University Triathlon Team (2013 – Present), Social and Retreat Planning Committees – Boston University Catholic Center.

RELATED EXPERIENCE:

• Novartis Institutes for BioMedical Research
Developing a noninvasive remote-monitoring device that tracks weight and peripheral edema for congestive heart failure patients; device ultimately will lower rehospitalization rate by increasing patient adherence to treatment plans … Sept. 2016 – Present.
  o Presented work at 2017 Northeast Bioengineering Conference … Newark, NJ.
• Ritt Neuroengineering Laboratory of Boston University
Research Assistant, participated in the development of a novel microendoscope for neural imaging; produced brain implants for biocompatibility testing; performed brain implant surgeries in mice; trained laboratory mice for neuro-control experiments … Feb. – Dec. 2016.
• Software Engineering – Mobile Application Design
Led development team of five members to create “TunePlay” (music memory game) for Android … Nov. – Dec. 2016.

ADDITIONAL EXPERIENCE: have partially financed living and educational expenses as:

• Bar-Back and Server – Pate’s Restaurant, Chatham, MA … Served bar and restaurant patrons at this popular area operation; maintained high service levels and helped generate repeat clientele … Summers 2015 & 2016.
• Office Assistant – Pediatric and Adult Vision Care, Wexford, PA … Assisted in organizing patient medical records, assisted patients, conducted product inventories … Fall 2012 – Summer 2014.

REFERENCES AND ADDITIONAL INFORMATION AVAILABLE UPON REQUEST
OBJECTIVE
An entry-level position in Biomedical Engineering or Biology with an emphasis on laboratory research

EDUCATION
Boston University College of Engineering & College of Arts & Sciences; Boston, MA
Bachelor of Science in Biomedical Engineering
Bachelor of Arts in Biology- Specialization: Cell Biology, Molecular Biology & Genetics, Expected September 2017
Current GPA: 3.26/4.0

Relevant Coursework:
Molecular Bioengineering I, Applied Bioinformatics, Thermodynamics, Signals and Systems, Systems Physiology,
Molecular Biology I, Immunology, Cancer Biology, General Microbiology, Organic Chemistry, MATLAB

PROJECTS:
Senior Project: Simple Visual Pathogen Detection on Paper Strips Fall 2016-Spring 2017
• Designed and developed a lateral flow assay for diagnosis of Staphylococcus aureus and MRSA by using peptide nucleic acid and rolling circle amplification technology
• Identified target sequences for Staphylococcus aureus and MRSA strains and designed corresponding peptide nucleic acid openers for each target sequence using MATLAB software.
• Presented final results at BU Dept. of Biomedical Engineering 36th Annual Senior Design Conference

Bacterial Identification Lab Grade: A Summer 2016
Identified an unknown bacteria using culturing, staining, and biochemical testing. Authored lab report describing findings.

Molecular Cloning Lab Grade: A Fall 2014
Conducted molecular cloning of an unidentified promoter using gel electrophoresis, PCR, and restriction enzyme digestion in order to reproduce the promoter in E. coli cells and identify the promoter. Modeled bacterial growth and gene expression of data from a time series analysis to estimate the level of gene expression and promoter activity.

EXPERIENCE
Assurance Technology Corporation Carlisle, MA
• Designed and developed Python code to process data for the Data Processing Unit (DPU), Solar and Galactic Proton Sensor (SGPS), Magnetospheric Particle Sensor High (MPS-HI), and Energetic Heavy Ion Sensor (EHIS) of the Space Environment In-Situ Suite (SEISS) of the Geostationary Operational Environment Satellite R-Series (GOES R).
• Created MATLAB code to analyze data from the SGPS and the MPS-HI. The GUI program assumed different user scenarios, performed statistical calculations on the data, and created Microsoft Excel output files.
• Participated in SGPS calibration at Massachusetts General Hospital and performed semi-real time data analysis using the GUI program. Performed real-time debugging.
• Utilized Linux for comparison of experimental data to theoretical data.

Chemistry Learning Assistant September 2014- December 2014
Boston University Chemistry Department Boston, MA
• Led three discussion sections, of 20-25 students each, with teaching fellows for General Chemistry 101
• Clarified students questions and demonstrated problems on the board
• Developed lesson plan to teach oxidation reduction reactions
• One of 13, chosen out of about 100 applicants

SKILLS
Laboratory: Bacterial Culture, Differential staining, Biochemical characterization of bacteria, PCR, Light microscopy
Language: English, Conversational Cantonese
EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering December 2017

SKILLS
Computer: MATLAB, Arduino, Python, Java
Language: Conversant in Mandarin
Laboratory: PCR, ELISA, DNA isolation from tails, purification of neutrophils, running agarose gels

SENIOR DESIGN PROJECT
Wireless Optical Recording of Neural Activity with Dr. Davison September 2016- Present
Boston, MA
• Created a wireless photodetector device to record neural activity in behaving mice
• Coded Simblee chips, using MATLAB and Arduino, for the acquisition and digital wireless transmission of neural data to PC

WORK EXPERIENCE
Boston University Nephrology Laboratory with Dr. Rifkin June 2016-Present
Undergraduate Researcher
Boston, MA
• Executed experiments using PCR, running agarose gels, ELISA, HotSHOT genomic DNA preparation, and purifying neutrophils to better understand the pathogenesis of systemic lupus erythematosus (SLE)
• Awarded UROP funding of $4,400

RESIST-TB June 2015-November 2015
Volunteer
Boston, MA
• Researched and summarized clinical trials in a table posted on their website and made pamphlets for events

Boston University Skin Pathology Lab June 2015-December 2015
Electronic Filing & Data Entry Assistant
Boston, MA
• Scanned hardcopies of patient reports and accessioned reports into electronic database, and filed slides

LEADERSHIP
Boston University Public Health Brigades September 2015-Present
Vice President
Boston, MA
• Traveled to Nicaragua as part of a 12 person team to build a sanitation system
• Organize future brigades trips, fundraising events, and public health events in Boston
• Present public health topics to club of twenty members
Eric W. Loreaux
6 Glennville Ave, Allston, MA 02134 • (610) 952-2833 (M) • eloreaux@bu.edu

EDUCATION

Boston University
B.S.: Biomedical Engineering (BME)
• GPA: 3.82/4.00
• Honors Societies: Tau Beta Pi (Engineering), Alpha Eta Mu Beta (Biomedical Engineering), Dean’s List (all semesters)
• Selected Coursework: Molecular Cell Biology & Biotechnology; Psychology; Systems Physiology; STEM Education Theory and Practice; BME Probability; BME Signals & Systems; Control Systems Biology; Bioinformatics; Molecular Bioengineering; Biomedical measurements I-II.

The Peddie School
• GPA: 3.90/4.00
• Awards: National Merit Scholar Finalist 2012

EXPERIENCE

Janssen Pharmaceuticals, Inc. – Translational Oncology, Bioinformatics
R&D Intern
May-August 2015; May-August 2016
Spring House, PA
• Processed and statistically analyzed microarray expression & next-gen RNA-Seq & DNA-Seq data sets for a range of Heme cancer cell lines and created back-end interactive visualizations in Spotfire using PostgreSQL database objects.
• Transformed and manipulated large data sets in order to detect patterns in collection quality and expression subtypes.
• Presented findings to the translational oncology department at the end of each internship.

Jefferson Hospital Department of Oral & Maxillofacial Surgery
Student Intern
August 2014
Philadelphia, PA
• Observed the interaction between medicine & engineering in a field that is an amalgamation of the two.

Mercy Philadelphia Hospital
Volunteer/Omber
July 2011
Philadelphia, PA
• Volunteered in patient care and relations and assisted medical personnel while observing the procedural functioning of the cardiology, wound care, and surgery departments.

LEADERSHIP

Tau Beta Pi Engineering Honors Society – Massachusetts Eta Chapter (Boston University)
Vice President
March 2016– Present
• Facilitate TBP’s presence on campus by organizing community outreach as well as induction ceremonies.

Boston University Admissions Department
Ambassador/Tour Guide
December 2015– Present
• Lead campus-wide tours and informational sessions with prospective applicants and their families.

General Physics for Engineers 1 (PY211)
Learning Assistant
January 2015 – May 2015
• Assisted in the instruction of course lectures, lead discussion sections, provided students with support and guidance.

Int'l Society for Pharmaceutical Engineering, BU Chapter
Vice President
February 2014 – January 2016
• Facilitated and organized student activities and events, connecting students w/ internships in biotech/pharmaceuticals.

SKILLS AND INTERESTS

Skills: Python, SQL, Matlab, & R programming languages, PostgreSQL databases, Spotfire visualization software
Languages: English (Native), Spanish (Proficient, not fluent)
Interests: Comedy, Science Fiction, and pondering our place in the universe
EDUCATION

**Boston University, College of Engineering**, Boston, MA
Bachelor of Science in Biomedical Engineering May 2017


ENGINEERING TEAM PROJECTS

**Senior Project, Design of an iPhone-Based Instrument for Monitoring Blood Alcohol**
Fall 2016 – Present
- Design of Bluetooth-enabled wrist-worn device that monitors blood alcohol concentration (BAC) utilizing near infrared technology
- Development of an iOS application that displays BAC, hails rides via external car sharing applications, and sends messages/location to preselected list of contacts

**Breath-Based Diagnostic Device for Lung Cancer**
Fall 2016
- Designed a diagnostic device capable of diagnosing lung cancer using breathe samples while considering regulatory principals

**Myoelectric Prosthetic for Trans-Radial Amputees**
Fall 2016
- Designed and prototyped a myoelectric arm capable of fine motor hand movement that was lightweight, comfortable, waterproof, and better fitting than many current models in the market

**EOG Controller to Move Computer Cursor with Eye Movements**
Fall 2016
- Utilized MATLAB and Electrooculography (EOG) signals to enable hands-free computer cursor movement

**Fiber Optic Bundle used to Measure Phantom Properties**
Spring 2015
- Designed and developed of a fiber optic bundle for use as a calibration device in measurement of tissue-emulating properties with a $400.00 budget

WORK EXPERIENCE

**Boston University Housing Department**
Mailroom Clerk
September 2016 – Present
- Sorted and released letter mail and packages received by students within the University

**University of Delaware Biomedical Engineering Department (REU)**
Undergraduate Research Assistant (Orthopedic Soft Tissue Biomechanics Laboratory)
Newark, DE
June 2016 – August 2016
- Determine the fibril- and fascicle-level mechanical parameter changes of rat tail tendon using MATLAB to determine effect of aging on tendon mechanics
- Create and present study findings in poster presentation at 2016 Undergraduate Research and Service Scholar Celebratory Symposium within University of Delaware

**Boston University Engineering Product Innovation Center**
Undergraduate Teaching Assistant (Course: Introduction to Engineering Design)
Boston, MA
September 2015 – December 2015
- Guided freshman/sophomore students in engineering topics including electric circuits, soldering, SolidWorks, basic coding, and understanding the engineering design process
- Responsible for assuring design project materials requested by students were suitable for intended use

**Starbucks Coffee Company**
Store Front Manager
April 2015 – October 2015
- Boston, MA

SKILLS

**Computer:** MATLAB, SolidWorks, PRISM GraphPad, Microsoft Office, Microsoft Excel

**Language:** Fluent in Spanish, conversational in Italian

AFFILIATIONS AND COMMUNITY SERVICE

Member of Lambda Chi Alpha (Alpha Zeta), Boston University's Chemia and Engineers Without Borders
Internship Qualifications

- Project based evidence of abilities to assess and contribute to existing design, production and quality assurance efforts and to support improvement of those areas
- Capacities to work within academia as well as laboratories and a medical setting, following pre-determined protocols and presenting finding(s) in summary or detailed reports
- Specialized interest in Orthopedic/Sports Medicine related topics
- Experienced in MATLAB, Microsoft Office, OpenSim

Biomedical Engineering Studies and Activities

Boston University

BS in Biomedical Engineering

- Undergraduate studies will focus on Orthopedic/Sports Medicine related engineering as well as Medical Instrumentation
- Biomedical Engineering Society, Society of Women Engineers, Admissions Tour Guide, Transfer Student Orientation Volunteer

Experience

Beth Israel Deaconess Medical Center

Research Student

- Working under the supervision of Dr. Ara Nazarian in the Center for Advanced Orthopaedic Studies
- Evaluating the success of various surgical repair methods of the scapholunate interosseous ligament to provide a conclusion on which method produces the best biomechanical results
- Shadow a physician assistant in the Department of Sports Medicine and Shoulder Surgery

Unity Orthopaedics – Rochester General Hospital

Intern

- Shadowed orthopaedic surgeon Dr. Michael Stanton in the operating room as well as clinical setting
- Observed an ACL surgery, a distal bicep tendon repair surgery, and a patellar instability correction surgery
- Shadowed two orthopedic physician assistants in clinical setting

Sports Physical Therapy of New York

Intern

- Shadowed a physical therapist in the evaluation and diagnosis stage as well assisted with basic physical therapy instructions for patients with orthopaedic related repairs/injuries

Selected Biomedical Engineering Projects

Boston University

Device, Diagnostics, and Design

- Designed and prototyped a medical device that reduces external hemorrhaging during emergency medical transport to reduce pre-hospital deaths

Product Design and Innovation in Biomedical Engineering

- Designed a rehabilitation device for post-operative rotator cuff injury patients with a balance of immobilization and mobilization of the shoulder to reduce healing time and stiffness associated post-surgery

Biomedical Measurements

- Completed an EOG based project to explore if eye movements can locate letters and spell out a words as an effective, non-verbal way to communicate

Introduction to Engineering Design

- Collaborated with Benevolent Technologies for Health, a firm that designs and manufactures prosthetic devices utilizing an adjustable custom fit made possible by a remold-able material, to design and manufacture a device to fill a matrix full of melamine material in less time than it currently takes
EDUCATION

Boston University College of Engineering
Bachelor of Science in Biomedical Engineering, summa cum laude
Concentration in Nanotechnology, Minor in Chemistry
GPA: 3.91/4.00
May 2017

Johns Hopkins University School of Medicine
PhD Student in Pharmacology and Molecular Sciences
Expected Matriculation: July 2017

PROJECTS

- Designed liposome nanoparticles for cancer immunotherapy application.
- Studied TWIST1 regulation of BIM in EGFR mutant non-small cell lung cancer (NSCLC).
- Modeled enzyme deficiencies in MPS disorders by gene knockout with CRISPR/Cas9.
- Developed a procedure for analyzing nystagmus frequency of the Optokinetic Reflex.

SKILLS

Tissue Culture, Liposome Preparation, ELISA, Thin Layer Chromatography, Western Blotting, qRT-PCR,
Protein Quantification, Transfections by Electroporation, CRISPR Plasmid Preparation, DNA Purification,
Liquid Handling Robotics, Bisulfite Conversion, MATLAB.

RESEARCH & WORK EXPERIENCE

Nanomedicine and Medical Acoustics Laboratory, Boston University
Undergraduate Researcher
September 2016-May 2017
- Performed ovalbumin to lipid conjugation and confirmed results with thin layer chromatography.
- Engineered liposome nanoparticles containing ovalbumin antigen and phosphatidylcholine.
- Measured B cell IgM secretion levels as a model of activation after antigen internalization.
- Assessed anticancer activity against melanoma cells with microscope imaging and cell staining.

Burns Laboratory, University of Pittsburgh
Summer Research Student
May 2016 - July 2016
- Investigated role of TWIST1 on BIM mRNA and protein levels in non-small cell lung cancer (NSCLC).
- Prepared abstract and presentation to summarize summer research findings.

Sharfstein Laboratory, SUNY Polytechnic Institute
Summer Intern
June 2015-August 2015
- Transfected CHO-S cells with CRISPR/Cas9 plasmids to create knockout models of MPS disorders.
- Imaged cells for GFP fluorescence and monitored cell viability post transfection.
- Concluded with poster presentation to faculty members.

Boston University Student Athlete Support Services
Tutor
February 2016 - May 2017

Boston University Mugar Memorial Library
Library Assistant
January 2014 - May 2017

AWARDS & ACTIVITIES

- Alpha Eta Mu Beta - Biomedical Engineering Honor Society, elected Secretary in May 2016
- Tau Beta Pi - Engineering Honor Society
- Boston University College of Engineering Dean’s List (7/7 Semesters)
- Excellence in Engineering Book Award (2016-2017 Academic Year)
Lisa Nguyen
469-236-4569 • Lhnguyen@bu.edu • linkedin.com/in/lisa-nguyen

Education

Boston University, College of Engineering, Boston, MA
Bachelors of Science in Biomedical Engineering; Concentration in Nanotechnology May 2017
Minor in Biology


Experience

Tufts Medical Center Emergency Department May 2016 – Present
Medical Scribe Boston, MA
• Transcribe patient and physician interactions into the Electronic Medical Record in real time
• Organize all patient physical exams, laboratory results, and procedures in compliance with HIPAA
• Expedite attending physician’s documentation records to improve patient and physician relations

Boston University School of Medicine, Department of Pharmacology and Neurology May 2014 – October 2015
Undergraduate Researcher Boston, MA
• Examined the autistic effects of protein Wnt5a regulation on microglia expression
• Tested effects of therapeutic drugs using animal behavioral studies, microfluidic devices, immunohistochemistry
• Collaborated with graduate students with their projects and reported data at weekly laboratory meetings

Engineering Projects

Senior Design: Simple Visual Pathogen Detection on Paper Strips September 2016 – Present
• Implement new PNA-RCA technology onto Lateral Flow strips for visual diagnostic testing
• Optimize testing conditions and design specifications based on point-of-care clinical needs
• Design DNA probes specific to identifying drug resistant genes in several bacterial strains

GlucoPen September 2016 – December 2016
• Prototyped an all-in-one glucose monitoring device using generic needles and test strips
• Iterated designs to reflect needs and feedback from medical professionals and patients
• Integrated intuitive mechanisms and user instructions to promote medical compliance

Leadership and Affiliations

Asian Student Union, President August 2013 – Present
• Lead campus-wide events to raise awareness for Asian culture and social issues
• Foster leadership abilities in all members by creating development program
• Delegate responsibilities amongst executive board members to maximize efficiency

College of Engineering Dean’s Host August 2013 – Present
Jack Kent Cooke Foundation College Scholar August 2013 – Present
InterVarsity Asian American Ministries, Pilot Project Lead August 2015 – May 2016
Global Application Initiative, Business Development Team Member September 2015 – May 2016

Skills

Laboratory: Cell culture, immunohistochemistry, microscopy, PCR, Western Blot, Logger Pro sensors, dilutions
Language: Proficient in Vietnamese
Blake Elizabeth Oberfeld
blakeo@bu.edu / 303.408.4742

EDUCATION

**Boston University, College of Engineering**, Boston, MA  
Bachelor of Science in **Biomedical Engineering** with minor in **History of Art and Architecture**.  
GPA: 3.98/ 4.00.  
May 2017

DISTINCTIONS

**Trustee Scholar**: Boston University full-tuition academic merit scholarship.  
**Harold C. Case Scholar**: Boston University scholarship recognizing extracurricular activities and merit, awarded to 8 juniors.  
**Dean’s List**: fall 2013 to present.  
**Tau Beta Pi**: Engineering Honor Society, fall 2015 to present.  
**Alpha Eta Mu Beta**: Biomedical Engineering Honor Society, fall 2015 to present.

PROFESSIONAL EXPERIENCE

**Research Assistant**  
**Orthopaedic and Developmental Biomechanics Laboratory (ODBL)**, College of Engineering, Boston University, MA  
January 2015-Present  
- Quantified degenerative changes in bone and cartilage via micro-computed tomography and Contrast Enhanced Computed Tomography to determine the role of the A2B adenosine receptor in the progression of rheumatoid arthritis.  
- Undergraduate Research Opportunity Program Stipend Recipient, Engineering Scholar Research Fund Recipient  

**Quality Improvement Intern**  
**Barbara Davis Center for Childhood Diabetes**, Children’s Hospital Colorado and University of Colorado Anschutz, CO  
May-August 2016  
- Increased activation and use of MyChart patient portal to 62.6%, a 16.3% improvement from previous summers.  
- Analyzed predictors of portal use and trends in use by both demographic and diabetes-related outcomes.  

**Clinical Research Assistant**  
**Diabetes and Endocrinology Clinical Trial Program**, University Hospital and Veteran’s Association Medical Center, CO  
May-August 2016  
- Contributed to the **Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness Study**, examining which combination of major pharmacologic treatments for type 2 diabetes is best for achieving long-term glycemic control.  

**Research Assistant**  
**Laboratory of Cognitive Neurobiology**, Boston University, MA  
January - December 2014  
- Investigated the long-term firing patterns of hippocampal place cells utilizing the microendoscope to monitor fluorescing neurons in-vivo for months at a time.  

**Intern**  
**Rocky Mountain Youth Clinic**, non-profit pediatric clinic, Thornton, CO  
May-August 2014  
- Conducted survey and processed data concerning emergency room overuse and the welfare of asthmatic patients.

ACADEMIC PROJECTS AND SKILLS

**Examining Muscle-Bone Crosstalk**, **Senior Project**  
**ODBL** and **Orthopaedic Research Laboratory**, Department of Orthopaedic Surgery, Boston University  
August 2016-Present  
- Developed a blunt impact trauma device to deliver well-defined and reproducible contusion to the mouse quadriceps and to use in characterizing the role of muscle-derived stem cells in injury repair.  

**Echo: A Voice Recognition and Playback System**, **Biomedical Measurements I**  
November-December 2015  
- Codified a digital channel vocoder to record speech and generate gendered, monotone, and whispered utterances.  

**Software**: Microsoft Office, MATLAB, Epic EHR, JMP, Amira, Scanco Medical, SolidWorks, Zotero, ABAQUS, MathCAD, LabVIEW.

LEADERSHIP

**Engineers Without Borders**  
**Co-Founder/ Secretary**  
August 2014-Present  
- Built passive and active cellular signal amplification systems for mobile health initiatives in Naluja, Zambia.  
- Designed and implemented holistic plan to increase access to potable water via rainwater collection, biosand filters, and sanitation initiatives.  

**Global Development Community**  
**Co-Founder/ Secretary**  
August 2014-Present  
- Established platform for collaboration between student groups and UN Major Group for Children and Youth.  
- Contributed to sustainable development policy through consultations and reports for Habitat III and World Humanitarian Summit.

**Massachusetts General Hospital**, **Volunteer (since 2016)**.  
**Global Medical Brigades**, **Brigader (since 2013)**.  
**Sweden Medical Center**, **Volunteer (May-August 2014)**.  
**Engineering Dean’s Host (since 2013)**.  
**Project Angel Heart**, **Volunteer (since 2015)**.  
**Trustee Scholar**, Big Sibling and Book Club (since 2014).  
**Rose Community Foundation (since 2010)**.  
Education
University of Massachusetts of Amherst Commonwealth Honors College, Amherst, MA 2013 - 2014
Boston University College of Engineering, Boston, Ma 2014 - 2017
  Bachelors of Science in Biomedical Engineering, expected in May 2017

Related Coursework:
Bioinformatics, Thermodynamics, Transport Phenomena in Living Systems, Signals and Systems, Control Systems, Biomedical Measurements I/II, Molecular Bioengineering, Molecular Cell Biology and Biotechnology, Systems Physiology, Protein Engineering and Drug Delivery, Introduction to Medical Imaging, Business and Technology Innovation

Experience
Physical Sciences Inc.  May 2015 - August 2015
Intern  Andover, Ma
  ▪ Programmed for ophthalmic imaging technologies using MATLAB.
  ▪ Used high-speed image processing along with many other image processing techniques to turn medical images (optical coherence tomographs, ultrahigh resolution photographs of cone photoreceptors, etc.) into research data.

Physical Sciences Inc.  July 2016 - August 2016
Intern  Andover, Ma
  ▪ Programmed a scoring algorithm to differentiate between tumor, adipose and fibrous tissue, and cancerous and noncancerous using MATLAB.
  ▪ Used optical coherence tomography (OCT) and low-coherence interferometry (LCI) techniques to successfully aid tissue discrimination.

Research
Dr. Smolina Lab  September 2016 – Present
Laboratory Research Assistant  Boston University
Advanced Multiplex qPCR for Rapid Pathogen Identification
  ▪ Conducting research to identify pathogens using Real Time PCR and pseudo-complementary primers with multiplex capabilities
  ▪ Identified genes and primers specific to E. Coli, Salmonella and Shigella which allow us to differentiate between the three bacterium.
  ▪ Analyzed data using gel electrophoresis for PCR and a melt-curve analysis for qPCR.

Engineering Project
Convergent Dental Design Project  September 2014 - December 2014
  ▪ Designed a small dental tool to illuminate an area of a patient’s mouth with white light of an intensity comparable to current systems to provide a clear view for the dentist during procedure
  ▪ Modeled a device with five intensity settings using an Arduino

Voice Echo and Manipulation  November 2015 - December 2015
  ▪ Created a device which takes input speech and outputs a manipulated/echoed speech.
  ▪ Achieved manipulated/echoed speech by coding a source filter model and a time varying filter in MATLAB.

CardiAct  September 2016 - December 2016
  ▪ Designed and developed for a medical device to improve cardiac arrhythmias.
  ▪ Determined product specifications, hazards, conducted a FMEA, and FDA regulatory pathways and patenting processes.

Skills
  ▪ Computer: MATLAB, C++, Python, HTML, Image J, SolidWorks, MathCad15, Microsoft Office
  ▪ Lab skills: PCR, multiplex qPCR, melt curve analysis, cell culture, pipetting, gel electrophoresis
  ▪ Languages: Gujarati (Indian Language)

Leadership and Affiliations
  ▪ Member, Theta Tau Professional Engineering Fraternity
  ▪ Biomedical Engineering Society (BMES) at BU
  ▪ Nar Narayan Dev Yuvak Mandal
    ▪ Organize and execute an annual national camp for hundreds of youths across the world
ASHIKA PATEL
40 Carlton Street • Brookline, MA 02446
Phone: 617-909-7560 • E-Mail: ashika@bu.edu

Education

Boston University, Boston, MA. September 2013–May 2017

- BS in Biomedical Engineering, May 2017
- Minor in Communications, specifically Advertising, May 2017

Experience

African Studies Outreach Center, Boston University – Outreach Assistant September 2015–Current

- Created virtual teaching kits as website resources and trailers for DVD sales.
- Created and launched the Adjusting Focus photography initiative to challenge and diversify perspectives on African countries.
- Worked with WorldCAT and Library World to catalog books and DVD’s for the Teaching Africa library.

IBM, Nairobi, Kenya – Summer Intern July 2014–August 2014

- Worked as a junior intern in the human resources and software development departments.
- Designed an example of a web interface that could be used by the Kenya Revenue Authority to improve office filing efficiency.
- Presented the web interface to the East African regional manager of IBM.


- Worked as an intern in filing and accounting for a printing press.

Projects

Engineering nanoparticles for cancer research September 2016–Current

- Designed and created phosphotidylcholine and ovalbumin liposomes to test their effect on the activity of murine B cells.
- Upon B cell activation, the liposomes and active B cells were tested as an anticancer strategy by observing cell death levels of B16F10-OVA cells exposed to the liposomes and active B cells.

Pneumonia diagnostic device September 2016–December 2016

- Designed a portable, quick, self-administered pneumonia diagnostic test for use in rural areas of low-resource countries.
- Interviewed doctors, pneumonia patients and healthcare providers in Kenya, Egypt and the U.S.

Visually guided hearing aid September 2015–December 2015

- Designed and created an initial prototype for a portable hearing aid that filters sound based on visual signals to reduce severity of the ‘cocktail party effect.’

Skills

- Computer: Microsoft Word, PowerPoint, Excel, MATLAB, Arduino, Solidworks (CAD), SPSS and Adobe Photoshop
- Languages: English, Kiswahili, Gujarati and French
Objective
Seeking a **full time** position in a challenging environment with an emphasis in engineering that will utilize my exceptional technological, analytical, and problem-solving skills for continued professional growth.

EDUCATION
Boston University College of Engineering, Boston, MA  
Bachelor of Science  
Biomedical Engineering Major  
Electrical Engineering Minor  
Technology Innovation Concentration

Relevant Coursework
Device Design & Diagnostics
Logic Design
Software Engineering
Biomedical Engineering Instrumentation

Power Electronics
Corporate Finance
Strategy for Technology-Based Firms
Microprocessors

Skills
**Computer:** SAP Business ByDesign, C++, C, Matlab, Verilog, LabVIEW, Microsoft Office Suite
**Instrumentation:** Breadboarding, Tektronix TBS oscilloscopes, Agilent 33210A function generator, ELVIS II board
**Languages:** Conversant in Spanish

PROJECTS
**“Assessment of Tendon Tear Progression In-vivo”** (Nazarian Lab, Beth Israel Deaconess Medical Center)  
Participated in Boston University’s Senior Design Project to construct a novel apparatus for an in-vivo study of tendinopathy in Sprague-Dawley rats. Designed a circuit to interpret signals from a linear actuator and used a microcontroller with software programs to analyze force exerted onto rat tendons. Investigated potential impacts the experiment could have on future studies and the orthopedic field.

**“Vitamin A Deficiency Diagnostic Device Design”** (Device Design & Diagnostics course)  
Created a working diagnostic device prototype that measured pupil dilation to determine if an individual was Vitamin A deficient. Utilized microcontroller software and Matlab image processing techniques that could be interpreted on a computer. Researched Food and Drug Administration protocols and regulations that the device should adhere to if introduced to the market.

EXPERIENCE
Topcon Medical Systems  
Purchasing Intern  
Oakland, NJ  
- Documented and recorded active purchase orders and sales orders for technical equipment from vendors across the United States  
- Used SAP Business ByDesign software to submit purchase orders for medical devices and parts for ophthalmological devices from Topcon Headquarters in Japan  
- Liaised and worked with the Technical Service Department to maintain devices and ensure proper quantities of parts and machines were available for customer orders

ING Capital LLC  
Loan Syndications Intern  
New York, NY  
- Provided input on loan pricing and structure based on analysis of current market conditions and comparable transactions in Leveraged, Project Finance, and LatAm spaces.  
- Utilized analytical skills to meticulously complete “Know your customer” regulatory process for all syndicated deals and secondary loan trades.  
- Time management and communication skills strengthened from working in a fast-paced, dynamic environment

Westchester Medical Center  
Biomedical Engineering/Information Systems Intern  
Valhalla, NY  
- Installed Radio-frequency Identification (RFID) devices that assisted medical staff when accessing user accounts that reduced time spent signing onto computers throughout the hospital  
- Enhanced teamwork from maintaining and repairing blood and fluid warmers in Operating Rooms alongside fellow interns  
- Leadership skills developed by mentoring new interns to follow device maintenance and procedures as per hospital regulations
Education

Boston University, Boston, MA
Bachelor of Science in Biomedical Engineering with Nanotechnology concentration September 2013 to May 2017
GPA: 3.53

University of Texas at Austin, Austin, TX
PhD in Biomedical Engineering September 2017 onwards

Experience

Senior Design Project, Advisor: Dr. Wilson Wong Boston, MA
- Understanding design principles of CRISPR based activation of genes in mammalian cells 09/2016 to present
- Test influence of change in CRISPR guide RNA characteristics on gene expression
- Apply customized CRISPR system to recombinase based circuits

Undergraduate Research, Advisor: Dr. Joyce Wong Boston, MA
Development of Targeted SPIONs for early detection and treatment of thrombosis June 2015 to present
- Developed emulsion-based protocol for maximum drug encapsulation (4 semesters of UROP)
- Currently testing methods to accurately characterize SPIONs (super paramagnetic iron oxide nanoparticles)

Rock Optics project November 2014-June 2015
- Examined effects of flow rate of fluids on pressure build up
- Developed better method of making flow chambers

Peer Leader in Women In Science and Engineering (WISE) Residence program Boston, MA
- Promote STEM education in freshmen women by providing support and a community 09/2016 to present
- Mentor freshmen in basic science courses

Technology Innovation Scholars Program Boston, MA
- Mentor FIRST Robotics team at St. Joseph’s Preparatory High School October 2015 to present
- Demonstrate impact of engineering on society through outreach programs in Boston Public Schools
- Guide students in the innovation process as they explore new technologies and engineering challenges

Peer Tutor at the Educational Resource Center Boston, MA
- Aid students in learning essential concepts in General Physics I and II January 2015 to present
- Demonstrate strong understanding of Physics concepts
- Serve as guide and mentor to tutees

Volunteer at Boston Medical Center Boston, MA
- Participated in the Preventive Food Pantry service Summer 2015
- Assisted low-income patients with chronic diseases in procuring free, healthy groceries

Job Shadow July 2014
- Shadowed surgeons in Wanless Mission Hospital, Miraj Medical Center Miraj, India
- Observed general working of cardiothoracic, neuro-, nephrology, pediatric and general ICU
- Observed medical technology problems faced by a low-resource setting hospital

Awards and Affiliations

Summer Term Alumni Research Scholar (2015 and 2016)
Member, National Society of Collegiate Scholars
Member, Alpha Eta Mu Beta
Member, Alpha Epsilon Delta
Patricia Pikura
ppikura@bu.edu • (631) 413-6564 • www.linkedin.com/in/patriciapikura

Campus Address • Box 9667 33 Harry Agganis Way • Boston, MA 02215
Home Address • 586 Grand Avenue • Lindenhurst, NY 11757

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering
Concentration in Technology Innovation

May 2017

Related Courses

INTERNSHIP EXPERIENCE
Precipart
Summer 2016
Quality Systems Intern
Farmingdale, NY

• Supported Quality Assurance department for a high precision custom solutions organization whom manufactures in Switzerland
• Gained an understanding of ISO 9001 and ISO 13485 standards for mechanical components and precision parts manufactured by Precipart
• Conducted quality investigations of customer complaints and provided solutions to Quality Director
• Created first article inspection reports with supplier data to ensure customer requirements were met
• Prepared and reviewed sample submission documents for customers
• Managed project distribution of Precipart’s quality manual and capability surveys to supplier base
• Attended Lunch-N-Learns with presentations from various departments to understand their role and utilization throughout the organization

PROJECTS
Senior Design, Epinephrine Auto-injector Storage Strategy
Fall 2016 – Present

• Analyzed the need for portable storage of epinephrine to better ensure passive temperature regulation both theoretically and experimentally
• Designed and developed, in a team of four, prototypes for epinephrine auto-injectors as a first line defense for individuals at risk for anaphylactic reactions caused by severe allergies
• Validated designs to confirm performance and practicality outside of a narrow temperature range

Automated Catheter Insertion Needle
Fall 2016

• Redesigned product design specifications for catheter insertion used during surgery through knowledge of biomedical device design processes
• Designed and produced a working prototype after evaluating designs by working effectively in a group of four
• Achieved an understanding for the fundamentals of design for biomedical devices and diagnostics

HeadsUp, a Hands-free Driving Device
Spring 2016

• Conceived and developed idea and business plan for a device where contents of a user’s phone are displayed on the windshield via Bluetooth technology and special optics, working in a team of four during Business in Technology Innovation course
• Demonstrated a leadership position as CEO of the team by creating a motivating and positive team environment
• Grasped an understanding of the importance of business in the development of new technology

ADDITIONAL EXPERIENCE
Boston University Enrollment Services
September 2013 – Present
Office Assistant, Work Study
Boston, MA

• Organize, prepare, and scan documents for Boston University Admissions and Financial Aid offices
• Complete urgent projects in a timely manner and train new employees on necessary tasks
• Prioritize incoming and current projects based on deadlines and urgency

SKILLS
Computer: MATLAB, LabView, Microsoft Word, Excel and PowerPoint
Languages: Fluent in Polish
Shaheer Ahmed Piracha
Apt# 26, 509 Park Drive, Boston, MA 02215 | shaheer@bu.edu | 857-445-1073 | www.linkedin.com/in/shaheer-piracha

EDUCATION

Boston University College of Engineering | Boston, MA
Bachelor of Science in Biomedical Engineering, Concentration in Technology Innovation
Dean’s List - Spring / Fall 2016
May 2017

Harvard Business School | Boston, MA
HBX – CORe Program
Summer 2015

WORK EXPERIENCE

Pharmacy Operation Intern, CVS Health | Woonsocket, RI
June 2016 – August 2016
• Performed a deep dive quantitative analysis of the current service model using lean six sigma.
• Collaborated with a cross functional team to find high impact improvement opportunities and built solution elements.
• Assisted in implementing a new service model across 10,000 stores.

Product Developer, Global Health Laboratory, Boston University | Boston, MA
May 2015 – Present
• Developed a device, PharmaChk, which screens for counterfeit drugs in low resource settings.
• Optimized the device to have a 95% precision rate and a 70% lower cost compared to current market products.
• Determine business and market entrance strategies by communicating with various stakeholders.

Research Assistant, Department of Otolaryngology, Boston Medical Center | Boston, MA
May 2014 - March 2015
• Evaluated the use and feasibility of the Da Vinci robots for minimally invasive surgeries.
• Analyzed metrics including cost, surgery time, and patient satisfaction to determine efficacy of this product.

PROJECTS

Senior Design, Bioventus LLC | Boston, MA
Fall 2016 - Present
• Optimize the delivery of bone regeneration protein to accelerate bone healing in trauma patients.
• Redesign the manufacturing process to ensure the product is scalable and robust.

Program Manager, Boston University’s Islamic Society | Boston, MA
Summer 2015 - Present
• Raised, managed and allocated $10,000 of funds towards free community dinners
• Developed a sustainable program that brought multicultural communities together and fostered discussions.

R&D Specialist, Bio Optics Laboratory, Boston University | Boston, MA
January 2014 - January 2016
• Worked with Spatial Frequency Domain Imaging technique (SFDI) for Cancer Diagnosis using 3D printing.
• Developed a motion detection system to examine the efficacy of chemotherapy drugs in mice with tumors.

PUBLICATIONS/AWARDS

Yanyu Zhao, Syeda Tabassum, Shaheer Piracha, Mohan Sobhana Nandhu, Mariano Viapiano, and Darren Roblyer, "Angle correction for small animal tumor imaging with spatial frequency domain imaging (SFDI)," Biomed. Opt. Express 7, 2373-2384


By Scharukh Jalisi and Gregory A. Grillone

Received a gold medal at the International iGEM Conference for research in Synthetic Biology

Recipient of UROP grant for research

LEADERSHIP/ COMMUNITY SERVICE

Inspirational Ambassador, Technology Innovation Scholars Program | Boston, MA
Fall 2016 - Present
• Promote interest in STEM fields amongst high school students from disadvantage and underrepresented backgrounds.
• Conduct interactive activities and mentor high school FIRST robotic teams for National Competitions.

Dean’s Host, Boston University’s College of Engineering | Boston, MA
Spring 2014 - Present
• Guide tours of College of Engineering for prospective students and serve as host for special functions.

Volunteer, Lahore General Hospital | Lahore, Pakistan
Winter 2014, 2015
• Assisted incoming patients in the Emergency department and took vitals.

SKILLS

Computer: Python, MATLAB, Microsoft Office, Basic SQL, Image J, Html , CSS, SolidWorks, LabScribe, LabView
Language: Fluent in Urdu, Hindi, Punjabi, Basic French
EDUCATION
Boston University College of Engineering, Boston, MA
Master of Engineering in Biomedical Engineering
Anticipated Graduation: May 2018
Bachelor of Science in Biomedical Engineering
Anticipated Graduation: May 2017
- GPA: 3.2/4.0

Related Course Work:

Universidad Autonoma de Madrid, Facultad de Ciencias
Semester-long Study Abroad experience in Madrid, Spain
January – May 2015

SENIOR DESIGN PROJECT
Exploration of Lubricity in Transcatheter Delivery Systems
September 2016 – Present
- Working in collaboration with Medtronic, Inc. to design, build, and test a two catheter delivery system which utilizes a hydrophilic-coated inner catheter and a handle to deliver consistent hydration in an effort to significantly reduce deployment and retraction force
- Generate catheter designs in Solidworks, build prototypes, conduct frictional testing and analysis via Minitab

WORK EXPERIENCE
Medtronic, Inc., Danvers, MA
May 2016 – September 2017
Advanced Manufacturing Engineering Intern
- Material Replacement Project: Worked in collaboration with a cross-functional team on $4.6B revenue material replacement project for a Transcatheter Aortic Valve Implementation (TAVI) delivery system
  o Built shafts of catheters, performed lamination and tensile testing, analyzed data in Minitab, presented data to cross-functional team and management
  o Participated in Tier II manufacturing meetings, Fishbone Analysis, and A3 Process Improvement Tool for Material Segregation
- Design Verification: Performed testing, inspections, analysis, and summary report generation for TAVI Guidewire Aging (3 year age study)
- Training: Trained other employees on manufacturing / testing processes and Minitab analysis techniques

Boston University Wilson Wong Synthetic Biology Laboratory, Boston, MA
September 2015 – February 2016
Undergraduate Researcher
- Engineered human cells to aid in cancer medications
- Performed cloning via Transformation, Gibson Assembly, and Polymerase Chain Reactions
- Sequenced DNA and transfected into mammalian cells

Lonza Biologics, Inc., Portsmouth, NH
June – August 2015
Quality Assurance Intern
- PAI Readiness: Supported upcoming FDA Pre-Approval Inspection (PAI) activities related to Records / Information Management and Training and Development teams
- Quality Assurance: Managed GMP records for FDA audits, performed documentation audit and gap analyses
- Training: Created training presentations to employees relating to Logbook reviews and Significant Figures

SKILLS
- Laboratory, Engineering and Manufacturing
  o Electronic pipette, electrophoresis instruments, ligation and mini-prep processes, Instron, MTS, oscilloscopes, microscopes, 6-Up fuser, ASG cutter, breadboards, 3D printer, CNC mill
- Software
  o MATLAB (Version 7), Minitab, Microsoft Office, Agile, SAP, Trackwise, Accutrac, Iron Mountain Connect, LTSpice, PSpice, LabVIEW
- Obtained Good Manufacturing Practices and Good Documentation Practices training
- Working proficiency in Spanish

LEADERSHIP
Boston University College of Engineering Student Government, Boston, MA
September 2015 – Present
Executive Vice President
- Chair bi-weekly meetings, plan large-scale events, facilitate communication between students and faculty
Dimitrios Psaltos
416 Commonwealth Avenue, Apt. #: 216 · Boston, MA · 02215 · (203) 803-5241 · djp0822@bu.edu

EDUCATION
Boston University College of Engineering | Boston, MA
Bachelor of Science in Biomedical Engineering
Undergraduate Research Opportunities Program Funding Recipient May 2017

Relevant Coursework
Engineering Economy, Product Design and Innovation, Molecular Biology, Circuits, Business Technology Innovation,
Thermodynamics, Differential Equations, Next Generation DNA Sequencing, Device Diagnostics and Design

WORK EXPERIENCE
Beth Israel Deaconess Medical Center | Boston, MA March 2016 - Present
Research Student March 2016 - May 2016, September 2016 - Present
• Analyzed and imaged bone specimens for orthopedic biomechanics research studies using MicroCT
• Prepared and conducted four-point bending and damage accumulation testing on cortical beams from dog femurs
• Prepared and analyzed large data sets accumulated through mechanical testing, using Microsoft Excel and MATLAB

Student Intern May 2016 - August 2016
• Designed and implemented a research study for Merck & Co., investigating the effect of bisphosphonate treatment for osteoporosis on bone biomechanical properties, in collaboration with Harvard Medical School and the Center for Advanced Orthopaedic Studies (CAOS) at Beth Israel Deaconess Medical Center

Western Connecticut State University | Danbury, CT Summer 2014
Research Assistant
• Conducted field work by actively surveying ticks to monitor the success of “bate boxes” at controlling Fairfield County’s tick population, and managed laboratory data entry on Lyme disease research, in-cooperation with Yale University School of Medicine, National Institute of Health (NIH), and The Center for Disease Control (CDC)

ADDITIONAL WORK EXPERIENCE
Lifeguard / Swim Instructor
• Boston University Aquatics | Boston, MA June 2015 - Present
• Wilton YMCA | Wilton, CT August 2011 - Present

ENGINEERING PROJECTS
Heart Failure Sleep Monitoring Senior Design Project Fall 2016 - Present
• Designing and constructing a sleep posture diagnostic device for monitoring the sleeping positions of patients with congestive heart failure (CHF), in collaboration with Jana Care Inc.

Surgical Sterilization Device Design Project Fall 2016 - December 2016
• Designing and constructing a low cost medical device to quickly and thoroughly sterilize surgical equipment after operations, preventing patient infection from improperly cleaned medical instruments

SKILLS
Computer: MATLAB, SolidWorks (CAD), Microsoft Office, Arduino, and experience analyzing large data sets
Laboratory: Cell culturing, gel electrophoresis, DNA extraction, basic circuitry, MicroCT scanning and analysis
Languages: Modern Greek (2009 New York State Regents Exam) and Spanish (Honors Level)

LEADERSHIP AND AFFILIATIONS
Boy Scouts of America, Eagle Scout Spring 2017 - Present
Order of the Engineer, Member Fall 2013 - Present
Boston University Club Baseball, Player
Biomedical Engineering Society, Member Fall 2013 - Present
BU College of Engineering, Dean’s Host Fall 2014 - 2015

AWARDS
Hellenic Medical Society’s Chris Bozes Scholarship, Society of Kastorians Scholarship Award, AP Scholar Award
Sruti R. Raja
33 Harry Agganis Way, Boston, MA 02215 • 904.859.3611 • sraja@bu.edu

Education
Boston University College of Engineering, Boston, MA
- Bachelor of Science in Biomedical Engineering, May 2017
- Kilachand Honors College
- Presidential Scholarship
- Overall GPA: 3.50/4.00, Dean’s List (3 semesters)

Experience
Research Assistant, Born Lab, Harvard Medical School, Boston, MA
- May 2015 – Present
  - Conducted MATLAB analyses to study spike count correlations and local field potential among V1 neurons
  - Assisted with experimental data collection of non-human primates

Research Assistant, Kanwisher Lab, Massachusetts Institute of Technology, Cambridge, MA
- October 2014 – May 2015
  - Assisted post-doctoral researcher with fMRI study that investigated visual cognition in people with Autism Spectrum Disorder
  - Ran fMRI scans on subjects and analyzed fMRI data

Summer Intern, Photonics Center, Boston University, Boston, MA
- May 2014 – July 2014
  - Reviewed research papers to select speakers and invitees to the 2014 NSF Noninvasive Brain Imaging and Function Workshop
  - Refurbished the Photonics Center’s heliostat and designed website to monitor it
  - Conducted microscopy experiments to compare methods for maximizing the intensity of a speckle pattern

Research Assistant, The Neurovisual Clinic, Boston University, Boston, MA
- January 2014 – May 2014
  - Administered rotational search tests to stroke patients to evaluate their neurovisual stimulus
  - Compared the neurovisual stimulus test data of control and stroke patients to understand the effects of stroke on visual perception

Research Student, Beth Israel Deaconess Medical Center, Boston, MA
- October 2013 – April 2014
  - Assisted post-doctoral researcher on the effects of diabetes on bone fracture
  - Provided support in data analysis, literature search, and animal dissections

Skills:
- MATLAB, Java, and HTML

Leadership and Activities:
Member, Alpha Eta Mu Beta, Biomedical Engineering Honor Society, Boston University
- October 2016 – Present

Dean’s Host, College of Engineering, Boston University
- January 2014 – Present

Technical Lead, Solar Pump Team, Boston University Chapter, Engineers without Borders
- September 2014 – January 2016
EDUCATION

Boston University College of Engineering, Boston, MA
- Bachelors of Science in Biomedical Engineering
- Concentration in Technology Innovation
- GPA: 3.59/4.00, Dean’s List (Five semesters)

Relevant Coursework:
Molecular Cell Biology and Biotechnology, Electronics, The Business of Technology Innovation, Strategy for Technology Based Firms, Intro to Business Law, Diagnostic Devices and Design, Product Innovation

Relevant Skills:
- Computer: Matlab, Solidworks, Microsoft software, Circuit Design, SAP, Minitab
- Engineering: Validation Preparation and Execution, Diagnostic Device Design, Quality Engineering, Wet Lab Experience, Collaboration, Public Speaking, Mentoring

EXPERIENCE

Technology Specialist I Fish and Richardson P.C. I Boston, MA
- January 2017-Present
- Assist in patent development and filing, including prior art searches, National Phase Applications, and United States Patent Office communication.
- Develop creative frameworks to defend or invalidate patents

Quality Engineering Co-op I Smith and Nephew I Mansfield MA
- May 2016-August 2016
- Acquired, validated, and implemented a vision system manufacturing aid (Light Guide System) to address critical assembly and packaging failures.
- Collaborated with colleagues to develop and craft solutions that were specific to Smith and Nephew’s business and manufacturing needs within the scope of the Light Guide Project.

Liver Function Manufacturing Intern I Diagnostics For All I Cambridge, MA
- October 2015-May 2016
- Constructed the liver failure diagnostic devices from raw materials and optimized processes for device assembly
- Not for profit company focused on solutions for monitoring liver failure in rural Africa, specifically patients treated for AIDS or Hepatitis C

Technology Innovation Ambassador I Boston University I Boston, MA
- September 2014-Present
- Travelled to low resource schools to expose students to an engineering career path.
- Visits entailed PowerPoint presentations, hands on activities, and sharing of personal experiences.

Legal Intern I Connolly Finan Fleming Solicitors I Dublin, Ireland
- June 2015-August 2015
- Attended hearings, appeals, and sentencing, occasionally accompanied by a barrister
- Lodged bails, affidavits, and created books of evidence/appeal.

PROJECTS

Senior Design Project: Low Resource HPV Diagnostic Device
- Engineer a low resource heating module to catalyze reaction on paper based diagnostic device

Low Resource Pneumonia Diagnostic Device
- Designed and prototyped a diagnostic product using Human Centered Design techniques

LEADERSHIP AND AFFILIATIONS

- College of Engineering, Dean’s Host
- Biomedical Engineering Society, Engineering Mentor
- Theta Tau: Engineering Fraternity, Professional Development Committee
- Kappa Delta Sorority, Academic Chair
- General Chemistry Learning Assistant
Evan Reynolds
33 Harry Agannis Way ∙ Boston, MA ∙ 02215 ∙ (860) 307-2117 ∙ er31@bu.edu

EDUCATION
Boston University College of Engineering | Boston, MA
Bachelor of Science in Biomedical Engineering ∙ Spring 2017
GPA: 3.00/4.00

Relevant Coursework

PROJECTS
Comparison and Implementation of Commutation Techniques ∙ Fall 2016 – Present
Senior Project | HeartWare Inc., a Medtronic Company
- Collaborated on a team to collect motor data and run analytics
- Configured development controller to interface with HeartWare’s mini ventricular assist device
- Concluded that FOC commutation offers comfort and stability improvements for the patient

LabVIEW Ventricular Assist Device (VAD) Controller ∙ Summer 2016
- Designed a controller in LabVIEW that changes motor settings in HeartWare’s HVAD system
- Developed under HeartWare’s device communication protocol

Improved Inhaler Device ∙ Fall 2016
- Designed a clip-on device for inhalers to help patients properly dispense their medicine
- Incorporated a series of 3 LEDs to take the user through each step of medicine administration
- Facilitated through embedded vibration sensors and Arduino Mini microcontroller

TECHNICAL SKILLS
Computer: MatLab, LabVIEW, SolidWorks, Creo, MS Office
Laboratory: Circuit design, procedural design, instrument/data configuration, EMG/ECG/EOG, gel electrophoresis, PCR, vector cloning, molecular staining, spectrophotometry

WORK EXPERIENCE
HeartWare Inc., a Medtronic Company | Framingham, MA ∙ Summer 2016
APD Engineering Intern
- Utilized LabVIEW for automated tool wrapping to increase efficiency of Validation team
- Procured various parts/sensors to increase number of parameters in clinical trials
- Decreased budget costs by configuring cheaper sensors to work in existing test setups
- Standardized an Engineering Test Report for protocol on automated experiments

Metropolitan District Commission | Barkhamsted, CT ∙ Summers 2012 – 2015
Head Lifeguard
- Management and scheduling of 16+ lifeguards
- Controlled all decision-making in patron safety and application of care

AFFILIATIONS AND HONORS
- Biomedical Engineering Society, member ∙ Fall 2013 - Present
- International Biometrics Society, member ∙ Fall 2013 - Present
- Dean’s List Wentworth IT, Boston University ∙ Fall 2012-2014, Fall 2016
Chase Douglas Richard  
Biomedical Engineer

ENGINEERING EXPERIENCE

**MARCH 2017 – MAY 2017**
Medtronic Advanced Energy, Portsmouth NH  
**Quality Engineer**
- Evaluate changes for existing products, monitor design developments for maintaining quality compliance and assists in software engineering, testing, and validation  
- Assist in developing test methods, equipment acquisition for new product testing, validations/qualifications, statistical analysis of data for significance, and other documented requirements for quality objectives  
- Investigate nonconforming material and report on corrective actions effectiveness and timeliness

**MAY 2016 – AUGUST 2016**
Cytonome, Boston MA  
**Systems Engineer**
- Control and manage system requirements for 6 Alpha-level cell sorting units during constant development  
- Drive mechanical, electrical and computational integration throughout the entire system  
- Work within the systems team on ongoing troubleshooting, validation and verification testing  
- Design and prototype fixtures to assist in testing and validation  
- Document assembly procedures, test plans and test deviations for 100+ future production units

**MAY 2015 – AUGUST 2015**
J.C. Cannistraro  
**Project Manager**
- Project control and management of 5+ jobs at one time ranging from 50,000–10.4 million  
- Cost analysis and budget management of 15+ jobs within a 4 month time period  
- On-site project coordination of 5-50 laborers and contractors

**MAY 2014 – AUGUST 2014**
Rhode Island Hospital  
**Clinical Engineer**
- On call/onsite repair of large medical instrumentation including CT, PET, MRI and X-ray machines  
- Diagnoses and repair of 100+ small medical and prosthetic devices  
- Operating room shadowing surgeons and perfusionists for 50+ hours

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RELATED COURSEWORK

**ADVANCED**
- Heat Transfer with an Introduction to Fluid Mechanics, Thermodynamics and Statistical Mechanics, Medical Device and Diagnostics, Control Systems, Signals and Systems, Bioinformatics, Optical Microscopy, Systems Biology of Human Disease

**INTERMEDIATE**
- Product Design and Innovation, Business of Technology Innovation

EDUCATION

**2014 – 2017**  
Biomedical Engineering  
Boston University  
Boston, MA

ENGINEERING PROJECTS

**2017**  
**iPhone-based Nitric Oxide Meter**  
Connected Systems programmer

**2017**  
**Self-cleaning Laparoscopic Camera**  
Design and Prototyping engineer

SOFTWARE SKILLS

**EXPERIENCED**
- SolidWorks, Python, MATLAB, Microsoft Office

**INTERMEDIATE**
- LaTeX, C/C++, LabVIEW, EMG, ECG, EOG

**BASIC LEVEL**
- ImageJ, Metamorph

AFFILIATIONS AND ACTIVITIES

**2013 – PRESENT**  
Biomedical Engineer Society

**2015 – PRESENT**  
Theta Tau Professional Engineering Fraternity

**2013**  
W.I.T. Men’s Varsity Soccer
Daniel Ripley  
Brighton, MA  
Phone: (413) 579-1271 Email: dsripley@bu.edu

OBJECTIVE
Biomedical Engineering major seeking an opportunity to contribute my education, skills, and experience in assisting an organization achieve its goals while building a solid foundation in the biomedical field.

EDUCATION

Bachelor of Science in Biomedical Engineering candidate (May 2017)  
Boston University, Boston MA  
Minor: Biology

EXPERIENCE

Histogenics (Waltham & Lexington, MA)  
Intern  
Summer 2016
➢ Edited and updated emergency action plans for both Histogenics locations  
➢ Revised and corrected Excel documents containing equipment identification information  
➢ Recorded on an Excel document the critical pieces of equipment that need to be on backup power supply  
➢ Assured that critical equipment in the field was plugged into a backup power supply outlet

Benevolent Technologies for Health (Boston, MA)  
Student  
2015
Class Project
➢ Participated in designing and engineering a prototype for measuring granular substances for use with implants  
➢ Successfully integrated the prototype into Benevolent Technologies production line

Roy’s Custom Carpentry (Westfield, MA)  
Carpentry Assistant / Manager  
2010 to present  
PT during summers
➢ Manage small team of carpentry helpers, delegating work, and overseeing quality  
➢ Estimate time and materials needed for small jobs  
➢ Maintain good customer relations when owner is off-site

Westfield Feed (Westfield, MA)  
Sales Associate  
2011 to 2012  
PT during school and summer
➢ Greeted customers, managed the cash register/service desk, restocked shelves, and loaded cars  
➢ Assisted in store opening and closing procedures

SKILLS
Organized, detail-oriented, multitask, projects prioritization, problem solver. Excellent verbal and written communication skills.

Computer: MS Office Suite (Excel, PowerPoint, Word), Matlab; Apple & Windows Operating Systems
Dewey Edward Robinson IV  
60 Mile Lane • Ipswich, MA 01938 • deweyriv@bu.edu • (978)-835-2354

Education

Boston University College of Engineering; Boston, MA  
Bachelor of Science in Biomedical Engineering  
Concentration in Technology Innovation  
May 2017

Universidad Autónoma de Madrid; Madrid, Spain  
Semester-long Study Abroad Project  
Spring 2015

Relevant Course Work
Business of Technology Innovation, Strategy for Technology Based Firms, Device and Diagnostics Design, Product Design and Innovation, Biomedical Measurements, Heat Transfer

Skills
- **Computer:** LabScribe2, MATLAB, Microsoft Office Suite, SolidWorks
- **Language:** Conversational in Spanish

Projects

Heart Failure Monitor; Senior Design Project in collaboration with Jana Care Inc. September 2016 – Present  
- Researching and designing a product to monitor the sleep of a patient in order to intercept a potential heart failure risk.

HemoCuff; Device and Diagnostics Design Final Project September 2016 – Present  
- Collaborating on a multidisciplinary team to design and prototype a device to stop hemorrhaging in emergency transport.

iAlert; Business and Technology Innovation Final Project January 2016 – May 2016  
- Utilized the skillset of a multidisciplinary team to design a wearable device for in-home care patients to monitor their vitals.
- Developed and analyzed a business model for the device including marketing strategy and long-term financials.

Music and the Heart; Biomedical Measurements II Final Project September 2016 – December 2016  
- Designed an EKG that monitored an individual’s heart rate while listening to different genres of music.
- Wrote a MATLAB program in order to analyze the EKG measurements.

Work Experience

The Trustees – Crane Estate; Ipswich, MA May 2014 – August 2016  
Membership Sales Associate, Facilities Manager, and Grounds Crew  
- Dealt in customer service in regards to selling merchandise and Trustee memberships.
- Operated events on the property, as well as supervised employees at events.
- Sanitized and maintained the facilities of the Crane Estate property.

Ipswich Butcher Shop; Ipswich, MA May 2014 – August 2014  
Sales Associate and Food Prep  
- Attended to the needs of customers in regards to placing and processing orders.
- Managed and operated industrial kitchen and cooking equipment.

Massachusetts Bay Youth Lacrosse League; Ipswich, MA March 2011 – June 2013  
Associate Official  
- Attended courses and received extensive training to become certified as a boys youth lacrosse Associate Official.
- Officiated games played by elementary school level players.

Clam Box of Ipswich; Ipswich, MA April 2010 – August 2013  
Food Prep and Fry Cook  
- Trained new employees in the processes of preparing seafood and side dishes.
- Managed and operated industrial kitchen and cooking equipment.

Leadership and Affiliations

College of Engineering Student Government Executive Board; Boston, MA May 2016 – Present  
Executive Board Secretary  
- Coordinate and manage meetings with College of Engineering Student Government officers.
- Organize and plan events for undergraduate students.
- Communicate information between Student Government, administration and undergraduate students.

College of Engineering Dean’s Host; Boston, MA September 2013 – Present  
Dean’s Host  
- Represent the College of Engineering by conducting tours of the Boston University campus to prospective students.
- Operate events for current and prospective students.

Class of 2017 Student Government; Boston, MA April 2015 – May 2016  
Secretary  
- Directed events for the Class of 2017 undergraduate students.
- Documented and maintained minutes for the College of Engineering Student Government meetings.
JENNIFER A. ROCK
52 Central Street • Byfield, MA • 01922 • 978-518-0661 • jrock32@bu.edu

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering December 2017
GPA: 3.90/4.00

Rensselaer Polytechnic Institute (RPI), Troy, New York
Bachelor of Science in Biomedical Engineering Transfer January 2016
GPA: 3.94/4.00; Deans List (Five Semesters)

Relevant Coursework:
Biomaterial Science and Engineering, Processing of Biomaterials, Biomechanics, Material Science Engineering, Modeling of Biomedical Systems, Cellular Biology, Physiology

ENGINEERING PROJECTS
“Real-time Muscle Movement Quantification by Ultrasound for Individuals After a Stroke” Fall/Spring 2016-2017
• Member of a team that is designing and developing a real time ultrasound system that will track the gastrocnemius and soleus muscle movements of stroke patients over their gait cycle. Human subjects are tested and raw time data is collected. Raw data through the use of an algorithm is converted to quantifiable measurements for analysis of muscular function.

“Effect of Agar Topography on Cell Growth Pattern and Protein Synthesis” Spring 2013
• Developed cell cultures with varied agar topography and observed how the growth patterns varied. Used Gel Electrophoresis methods to look at how protein expressions varied among cultures.

“Model Engineering Design Project with Robotic Device” Fall 2013
• Worked as member of a team to design and develop a device to tie shoes for the elderly; analyzed whole design process of contacting customers, conducting research, concept generation, device outline, subsystem design, subsystem testing, assembling device and final testing.

SKILLS
Computer Programming: CAD, MATLAB, Minitab, Labview, Solid Works
Computer Software: Microsoft Office
Laboratory: Cell culture, Inoculation, SDS-PAGE, staining, microscopy, titration, ultrasound, ECG

WORK EXPERIENCE
Neuromotor Recovery Lab | Boston University 2017
• Conduct research related to eliminating walking-related disability due to neurological injury

Waitress, Groundswell Café | Salisbury, MA May 2016-September 2016
• Worked in fast paced environment with emphasis on customer service

Emergency Room Assistant, Saint Mary’s Hospital | Troy, NY September 2014-December 2014
• Assisted staff where needed, refilled medical trays, cared for patients, cleaned rooms and medical equipment after patient discharge

Nanny | Newbury, MA 2010- 2014
• Organized summer schedule and looked after the safety and well-being of two active children

LEADERSHIP AND COMMUNITY ACTIVITY
Alpha Eta Mu Beta Biomedical Engineering Honor Society 2016
Tau Beta Pi Engineering Honor Society 2014
Triton Regional High School Varsity Basketball and Lacrosse Team, Captain 2010-2011
Women’s Leadership Conference May 2010
Community Service Club 2007-2011
National Honor Society 2009-2011

AFFILIATIONS AND AWARDS
RPI Women’s Basketball, Member 2011-2014
High School Math Team, Member 2010-2011
Varsity Soccer, Basketball and Lacrosse 2007-2011
St. Michael’s Book Award June 2011
Scholar-Athlete 2008-2011
Women’s Basketball Liberty League Rookie of the Year 2012
BRIANNA C. RODGERS  
8 Brookside Avenue | Hazlet, NJ 07730 | 732.614.9396 | brodgers@bu.edu

EDUCATION

**BOSTON UNIVERSITY COLLEGE OF ENGINEERING, Boston, MA**  
**Bachelor of Science, Biomedical Engineering**  
Concentration in Technology Innovation  
Cumulative GPA: 3.1/4.0  
**MAY 2017**

**RELEVANT COURSEWORK:**  

**SENIOR YEAR DESIGN PROJECT**

**NOVARTIS INSTITUTES FOR BIO MEDICAL RESEARCH, Cambridge, MA**  
**SEPTEMBER 2016-PRESENT**

- Designing, manufacturing, and analyzing a medical device, in team collaboration, that will monitor a heart failure patient’s condition and alert the patient when it detects a risk of hospitalization due to peripheral edema  
  - Compiling design and development input user needs documentation by interviewing physicians and patients to gain meaningful input for the product specification  
- Accepted invitation from and presented at the Northeast Bioengineering Conference

**WORK EXPERIENCE**

**NOVARTIS PHARMACEUTICALS CORPORATION, East Hanover, NJ**  
**SUMMER 2016**

- Intern, Digital Medicine & Devices Group  
- Initiated the development, implementation, and management of an internal communication platform to enable the restricted access sharing of confidential information as it relates to Novartis’ innovative endeavors to medical devices and digital medicine strategy  
- Compiled and summarized key device regulations, guidances, and regulatory precedence for both the United States and Europe  
- Provided strategic project management support for Novartis global conference calls in order to provide summation of confidential strategic plans into classified and non-classified memoranda

**RITT BIOMEDICAL AND NEUROSCIENCE LABORATORY, Boston, MA**  
**OCTOBER 2015-MAY 2016**

- Research Assistant  
- Applied neuro-engineering principles, by behavioral training and co-performing acute brain surgeries on mice, to understand the function of neural systems and to develop strategies for future biomedical applications in neuroscience

**NEW JERSEY TRANSIT, Newark, NJ**  
**SUMMER 2015**

- Intern, Capital Planning and Programs Engineering Design Department  
- Collaborated with the Project Manager to oversee the development of the design of Capital Projects, and participated in cross-functional business meetings  
- Designed electronic circuits for company facilities given specific parameters by the Electrical Engineer

**SKILLS**

**PROGRAMMING:** MATLAB, LabVIEW, SolidWorks, Verilog  
**SOFTWARE:** Microsoft Office, SharePoint  
Experience with Project Management, Biodesign, Medical Device Quality Systems, Process Validation, & Risk Analysis

**AFFILIATIONS & INTERESTS**

**VOLUNTEER:** Gamma Phi Beta Sorority “Girls on the Run Non-Profit Organization”

**CLUBS:** Health and Life Sciences

**PROFESSIONAL SOCIETIES:** Order of the Engineer, National Honor Society

Writing, Photography, Yoga, Neuroscience, Traveling, Music

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Michelle Rose
13 Douglas St, Millburn, NJ 07041 (Permanent) · (973) 618 - 6584 · rosem32@bu.edu · www.linkedin.com/in/michellerose32

EDUCATION
Boston University
Bachelor of Science in Biomedical Engineering, May 2017
GPA: 3.96
Dean’s List: Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016

PROFESSIONAL EXPERIENCE
NIH: Laboratory of Cell Biology/Microfabrication and Microfluidics Unit
Summer Research Intern
June 2016 – August 2016
• Project goal: Grow cancer cells in 3D using microfabricated pillars and controlled oxygenation to mimic in-vivo tumors
• Wet-lab environment, extensive work with mammalian cells (OVCAR8, MCF-7) in Matrigel and polydimethylsiloxane
• Maintain custom-made bioreactor, image 3D cells with confocal microscope, isolate RNA for gene expression analyses

Khalil Lab
Research Assistant
December 2015 – Present
• Project goal: Develop gene therapies for complex diseases using customized zinc fingers
• Wet-lab environment; molecular cloning, design constructs, send constructs for sequencing, assist in analysis
• Culture and work with mammalian cells (HEK-293)

Biomedical Optical Technologies Lab
Research Assistant
April 2015 – December 2015
• Project goal: Use diffuse optics techniques to image cancerous tissue in real-time via a wearable probe
• Run tests using lasers and phantoms to check functionality and accuracy of devices for probe
• Analyze data in MATLAB and Microsoft Excel; focus on absorption and scattering coefficients

Boston University Student Athlete Support Services
Tutor
January 2016 – Present
• Tutor individuals and groups by assisting the understanding of core concepts
• Courses include calculus, physics, biology, circuits, mechanics, and upper-level engineering classes

SKILLS
Python, MATLAB, C++, LABVIEW, Microsoft Office, ImageJ, Oscilloscope, Electromyography, Electrocardiography, Electrooculogy, Cell Culture, Confocal Microscope Imaging, Molecular Cloning and Wet-Lab procedures (Miniprep, PCR, Gibson Assembly, Gel Electrophoresis, Gene Knockouts), Microfluidics techniques (PDMS Mold Fabrication)

RELEVANT COURSEWORK
Molecular Bioengineering, Thermodynamics, Transport Phenomena (Heat and Mass Transfer), Bioinformatics, Immunology, Biomolecular Architecture (Biochemistry), Systems Biology of Human Disease and Personalized Medicine, Product Design and Innovation in Biomedical Engineering, Biomedical Measurements

ACTIVITIES AND AWARDS
uWISE (Undergraduate Women in Science and Engineering)
Secretary
May 2015 – Present
• Support women in STEM fields through community, mentorship, and professional development opportunities
• Run meetings, plan events, fundraise, budget, send out emails to all members

Visitor’s Program, Boston Medical Center
Physician Shadowing, Boston Medical Center
College of Engineering Student Advisor
August 2016 – December 2016

Alpha Eta Mu Beta, Biomedical Engineering Honors Society
Induction: Fall 2015

Tau Beta Pi, Engineering Honors Society
Induction: Fall 2015

College of Engineering Dean’s Host
September 2015 – Present

College of Engineering Book Award
September 2015

Great Lakes National Scholarship
Summer 2015
OBJECTIVE
To obtain a full time entry level position in the biomedical engineering field

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering

Relevant Coursework
Differential Equations, Principles of Molecular Cell Biology, Systems Physiology, Thermodynamics, Mechanics, Business of Innovation, Bioinformatics, Device Design

PROJECTS
• Design and construct wearable RFID technology to continuously monitor neonatal vitals. Key device specifications include electrocardiogram accuracy, non-intrusive, and low cost. Spring 2017
• Simulate process of designing and bringing medical device to market. Project focused on prior art search, patent application process, FDA application for Class II device including 510k application, clinical and pre-clinical study design, and quality systems analysis including FMEA. Fall 2016
• Through molecular cloning and the observation of GFP expression, three inducers were used to determine which promoter was present. Fall 2014
• Designed and constructed bridge model according to specified dimensions. Prior to testing, a Matlab program was written to successfully predict point of failure. Summer 2014

SKILL AND LABORATORY TECHNIQUES
Software: Microsoft Office, Matlab, C++, Python, Linux, Windows, Adobe Reader
Skills: Time management, excels both independently and in a team setting, excellent oral and written communication, organization, responsible, dependable
Lab: Aseptic Technique, Protein and DNA purification, Molecular cloning, Northern Blot, Western Blot, Polymerase Chain Reaction, Time Series Analysis, ECG, EMG, vital signs

EXPERIENCE
Charlie’s Garage, Salem, MA
Mechanic/Sales
• Performing basic vehicle maintenance following factory specification as well as state regulated inspection standards.
• Researching used car value and creating listings of inventory.

Olive Garden Restaurant, Danvers, MA
Server/Line Cook
• Providing friendly customer service in a fast paced setting while promoting team work.
• Following strict recipe and food safety guidelines while maintaining a clean and organized work space.

Dunkin Donuts, Salem, MA
Baristo
• Providing excellent customer service while maintaining an organized and friendly work environment. Granted responsibility of a key to lock/unlock building.
Kate Ryan

Local Address: 10 Buick St. #8270, Boston, MA 02215
Home Address: 32802 Parkplace Lane, San Juan Capistrano, CA 92675
949-374-3810 • ryankate@bu.edu • linkedin.com/in/kathleenvictoriaryan

EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering, GPA in College of Engineering: 3.65
Concentrations: Nanotechnology, Technology Innovation


EXPERIENCE

Undergraduate Researcher – Boston, MA  
Boston University, Biological Design Center  
March 2015 – Present
- Designed and successfully executed a synthetic biology research project for mammalian genetic logic applications.
- Built a database that increased efficiency of the cloning process and productivity of the research team rose by 300%.
- Won Gold Medal at iGEM Jamboree; nominated Best Foundational Advance research project, Top 5 of 280 teams.
- Characterized the design principles governing CRISPR/dCas9-activators, tested their reproducibility, and engineered these promoters to produce a robust and tunable response from a gene of interest by applying the design rules.

Inspiration Ambassador | FIRST Mentor – Boston, MA  
College of Engineering, Technology Innovation Scholars Program  
October 2015 – Present
- Lead interactive workshops at K-12 schools to expose underrepresented students to design and innovation.
- Advised high school robotics team on hardware selection, interface and total subsystem design to meet requirements.

Consulting Analyst – Boston, MA  
Accenture Consulting  
June 2012 – August 2016
- Applied strategy development, architecting value and operating model architecture skills to build deliverables with my team, such as the blueprint for the EU component of the project.
- Delivered advisory services in support of technology enabled business change through solution architecture documents, PowerPoints and third-party vendor selection.
- Assisted my team with project management, discovery, and own client weekly status reports and stand-up meetings where we structure daily work.

PROJECTS

Scalable Solutions  
April 2016
- Designed an integrated infant scale using the Stanford Biodesign process and outlined regulatory approval strategy.

ECHO: Voice Modification Device  
December 2015
- Invented ECHO, from product inception, design, prototype to successful presentation and delivery with a team.

Energy Industry Companies Analysis  
April 2013
- Analyzed seven companies, using SWOT, Porter’s Five Forces, profitability and efficiency in a team environment.

SKILLS


LEADERSHIP AND AWARDS

Resident Assistant – Boston University, Residence Life  
May 2016 - Present

National Charity League – Capistrano Coast, Sustaining Member  
June 2005 - Present

Clare Boothe Luce Award  
June 2015
- Awarded exceptional female Undergraduate Research Scholarship for work in STEM given to top 2% of applicants.

Dean’s List – Boston University, Two Semesters  
June 2016 – Dec 2016
Tyler Ryan

10 Buick St.                   (203) 676-5322 Cell
Boston, MA 02215              ryan@bu.edu

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EDUCATION

Boston University
- Biomedical Engineering Major – Senior Graduating May, 2017 GPA: 3.85
- School of Medicine Anticipated Graduation 2020

BACKGROUND

Tien Laboratory – Boston University Boston, MA Mar 2014 to present
Undergraduate Researcher
- Tissue engineering research focusing on creating lymphatic vessels and vascularized fat.

Catering By Christine Trumbull, CT May 2014 - present
Seasonal Caterer
- Cater large weddings and corporate events

Brigham and Women’s Hospital Boston, MA Nov 2013 to 2015
Volunteer
- Central Transport and Emergency Departments

Yale University Interdisciplinary Center for Bioethics New Haven, CT Summer 2013
Student Intern
- Provided technology support to Professors, Program Faculty, and students
- Attended 6 hours of daily lecture in bioethics topics ranging from children’s rights to research ethics

Milford Hospital Milford, CT 2012 - 2013
Volunteer
- Central Transport Service

BOSTON UNIVERSITY ACTIVITIES

Global Medical Brigades
Member/Brigader, Medications Committee 2014 - 2016
- Perform clinical work in rural Honduras communities
- Organize fundraising events
- Secure medication purchases and donations for clinical work in Honduras

Engineers without Borders 2013 - 2016
Technical Team Lead
- Lead a team of students to develop water transportation devices for a community in Zambia

Honors
- Tau Beta Pi Engineering Honors Society
- Alpha Eta Mu Beta Biomedical Engineering Honors Society
- Orange Masons Scholarship Recipient
EDUCATION

BOSTON UNIVERSITY, Boston, MA
B.S., Biomedical Engineering (concentration: nanotechnology), May 2017
• GPA: 3.57/4.00
• Provost’s Scholar (2015)

RESEARCH

GRINSTAFF GROUP, BOSTON UNIVERSITY, Boston, MA
Undergraduate Research Assistant, April 2015 – present
• Characterize the dependence of a select polymer’s structural properties on synthetic design specifications
• Study the material properties of polymer tribosupplement candidates designed for treatment in early osteoarthritis of the knee

SNYDER GROUP, CENTER FOR ADVANCED ORTHOPAEDIC STUDIES, BETH ISRAEL DEACONESS MEDICAL CENTER, Boston, MA
Undergraduate Research Assistant, May 2015 – present
• Characterize the mechanics of bovine osteochondral explants under various biolubricating conditions
• Assess the structural integrity of bovine osteochondral explants under mechanical test conditions imparting wear

BIOVENTUS, LLC, Boston, MA
Undergraduate Research Intern, May 2016 – October 2016
• Characterized osteogenic signaling activity in periosteum-derived cells stimulated by endogenous & designer bone morphogenetic proteins
• Conducted drug release kinetic studies & µCT image analysis on drug carrier variants
• Parallel studies with Chen Lab, College of Engineering, Boston University

SOFTWARE & LABORATORY EXPERIENCE

• Rheometry
• Western blot
• Adobe Photoshop
• Cartilage mechanical testing
• ELISA
• ImageJ
• µCT imaging
• MATLAB
• Microsoft Office Suite
• Cell culture
• Adobe InDesign

ACTIVITIES & PROGRAMS

ENGINEERS WITHOUT BORDERS
• Oversaw BU chapter’s WASH project development, post-project monitoring, and community impact assessment
• Traveled to community program in Naluja, Zambia in July-August 2015; served as stateside coordinator for January, August 2016 trips
• Sanitation/Latrine Project Technical Lead (2014-15), Networking Chair (2015), NE Regional Conference Agenda Coordinator (2016)

RESIDENCE LIFE
Resident Assistant, August 2015 – present
• Facilitate on-campus living for residents in large dormitory communities during two academic and two summer terms

COLLEGE OF ENGINEERING DEAN’S HOST PROGRAM
Lead Engineering Ambassador, September 2014 – present
• Lead campus tours for prospective students and support year-round ENG programming

LEARNING ASSISTANT PROGRAM
General Chemistry Learning Assistant, September 2014 – July 2015
• Taught CH101/102 students alongside faculty and teaching fellows during lectures, discussions, and office hours

MILLENNIUM CAMPUS NETWORK
Fellow, September 2015 – May 2016
• Represented Engineers Without Borders in eight-month fellowship geared toward organizational capacity building
• Finished first place in key performance indicators; awarded grand prize in concluding pitch competition
• Executive Track speaker at White House during Millennium Campus Conference 2016 in Washington, D.C.

CLINICAL
• Shadowing intern, New Jersey Orthopaedic Sports, Edison, NJ (December 2013 – March 2016)
• Volunteer, New Jersey Neuroscience Institute, John F. Kennedy Medical Center, Edison, NJ (June 2014 – March 2015)

MEMBERSHIPS
• BU Global Dev. Community
• Boston Medical Reserve Corps
• Alpha Eta Mu Beta
• Alpha Epsilon Delta
EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering  May 2017
Minor in Mechanical Engineering
Concentration in Technology Innovation

Universidad Autónoma de Madrid, Madrid, Spain
Semester-long Engineering Study Abroad Program  Spring 2015

Related Coursework:
Electric Circuit Theory, Bioinformatics, Mechanics of Materials, Signals and Systems, Controls,
Thermodynamics, Fluid Dynamics, Supply Chain Engineering

SKILLS
MATLAB, Excel VBA code, C/C++ programming, Python, Spanish Language,
Creo Parametric, SolidWorks

PROJECTS
Robotic Mouse  Fall 2014
• Coded a microprocessor in C++ to perform commands
• Designed and coded robot to use sensors to follow a black line and repeat the pattern
• Soldered electrical circuit board and tested all available functions

Hypoxemia Recovery  Fall 2015
• Used a pulse oximeter to analyze recovery rates associated with different heart rates
• Created a computer program to record heart rate and blood oxygen levels of each subject

RELATED EXPERIENCE
OMLP Engineering Intern  May 2016 – August 2016
GE Healthcare  Waukesha, WI
• Operations Management Leadership Program Intern; High Tech Sourcing Department for the Electronic
  components team
• Established and implemented an integrated circuit strategy for using strategic suppliers to drive cost
  down for Ultrasound systems

Engineering Intern  June 2015 – August 2015
GE Aviation  Lynn, MA
Assembly, Test and Overhaul - Quality Department
• Worked on shop floor to establish a tool control system to decrease risk of foreign object damage
• Established a tool accountability system and daily maintenance process for the assembly line workers
  to reduce loss of tools and subsequent engine damage

Teaching Assistant  Sept 2014 – Present
Boston University, Mechanical Engineering Dpt.  Boston, MA
• Develop technical skills involved in MATLAB programming
• Lead weekly class lectures and office hours
• Administer and grade midterm exams as well as final project assignments

Research Assistant  May 2014 – August 2014
Tufts Medical Center  Boston, MA
• Analyzed patient records to find suitable candidates for asthma treatment study
• Reviewed effects of taking patients off medication during warmer, summer months

ADDITIONAL EXPERIENCE
Resident Assistant  July 2015 – Present
Boston University Residence Life  Boston, MA
• Counsel, advise, and foster development of relationships among 43 first-year students
• Assist with resident issues ranging from roommate conflicts to health and safety concerns
• Serve as liaison between students and university administration

Server, Hostess, Joe’s American Bar & Grill  May 2014 – October 2014

ACTIVITIES & ACHIEVEMENTS
• Theta Tau, Professional Engineering Fraternity
  • Founding Executive Board member of the Boston University chapter
• Dean’s Scholarship Recipient
• Dean’s List
Nicholas Russell Serdaru  
240 Babcock St., Apartment 3, Brookline, MA 02446  
(267) 987-2397 • nserdaru@bu.edu • www.linkedin.com/in/nicholas-serdaru

EDUCATION

Boston University College of Engineering  
Bachelor of Science in Biomedical Engineering  
Boston, MA  
Expected May 2017


EXPERIENCE

Teletronics Technology Corporation  
Product Design and Quality Assurance Intern  
Newtown, PA  
Summer 2014

— Performed stress tests on flight instrumentation software to assure quality performance for individual customer needs
— Tested minimal black box functionality in electronic discharge labs to ensure product integrity

Philadelphia College of Osteopathic Medicine  
Lab Technician  
Philadelphia, PA  
Spring 2012

— Cultured asthmatic lung tissue to prepare cells for DNA replication process
— Ran Polymerase Chain Reactions on cultured asthmatic lung tissues to amplify target DNA sequences
— Performed experiments and light spectroscopy on tissue samples with different corticosteroids to test drug effectiveness and safety

PROJECTS

Advanced Multiplexed qPCR for Rapid Pathogen Identification
— Designed primers for polymerase chain reactions and analyzed results using gel electrophoresis
— Use primers in a multiplexed format and analyze a melt curve to ultimately be able to discern between *E. coli*, *Shigella*, and *Salmonella* and between their toxic and non-toxic strains

CardiAct
— Hypothetical design and development for a medical device to treat heart arrhythmias
— Analyzed specific product parameters, performed FEMA analysis, identified potential hazards and harms, as well as analyzed possible FDA regulatory pathways for eventual patenting.

EZ-Tite Skate Tightener
— Worked in a group to develop a better ice skate tightener specifically for youths and elders
— Brought product to market and used financial analysis to accurately determine market viability and chances for product success
— Presented idea to current venture capitalists in a mock pitch setting to understand how important a concise presentation is for funding

SKILLS

Lab: Cell Culture, Pipetting, IR Spectroscopy, PCR, Multiplexed qPCR, Gel Electrophoresis, Melt Curve, Vector Cloning
Languages: French

LEADERSHIP

Theta Tau Professional Engineering Fraternity  
Founding Member  
November 2014-Present
Education

Boston University College of Engineering, Boston MA
Bachelor of Science in Biomedical Engineering
Concentration in Technology Innovation
Dean’s List (Three Semesters)
Member of National Honor Society (Phi Eta Sigma)
Relevant Courses: Strategy for Technology Based Products, Device and Design, Bioinformatics, Signals and Systems

Universidad Autonoma de Madrid, Spain
Semester-long study abroad program at technical institute

Work Experience

Research and Development Intern, Bioventus | Boston, MA
• Re-designed a surgical tool for an Osteoinductive Implant to be used for Minimally Invasive Surgery
• Biomaterial characterization of granule used for orthopedic healing
• Analyzing results to generate reports using Microsoft Power Point and Excel to senior leadership

Research Assistant, Massachusetts Institute of Technology (MIT) | Boston, MA
• Selected to re-design and develop an underwater drone prototype
• Assigned as team leader to organize, analyze and present the robot at MIT Nautical Night and MIT 100 years of Innovation
• Improved user-interface and performance of underwater drone to detect pH, temperature and location in ocean

FIRST Mentor, Technology Innovation Scholars Program (TISP) | Boston, MA
• Organized informational activities to increase interest of low-resourced high school students in cancer and nanotechnology
• Represented TISP to create awareness about engineering in low-income high school students in Pakistan
• Designed the front-end implementation for a video game by creating a layout for user interface
• Mentored BU Academy high school students for National Robotics Competition

Student Assistant, Career Development Office, Boston University | Boston, MA
• Communicating with students, employers and alumni for recruitment process
• Collaborating in a team to plan and organize career fair events/workshops, office database and website

Leadership Experience & Affiliations

President, Engineering World Health Chapter - Boston University | Boston, MA
• Raised $12,000 and organized a global health trip to Lima, Peru
• Setting goals, objectives, managing the team and overseeing all corresponding activity for Peru trip and informational talks
• Planning events for the incoming Biomedical Engineering students to connect with developing countries

Mentor, Engineering Transfer Resources and Advising Community (ENG TRAC) | Boston, MA
• Connecting with incoming transfer students to guide with classes and university activities

Member, Society of Women Engineers (SWE) | Boston, MA
• Female Engineer of the Year for 2018

Member, Biomedical Engineering Society (BMES) | Boston, MA

Technical Projects

Optimization of Calcium Phosphate Granules For Orthopedic Healing | Boston, MA
• Senior Design | Bioventus LLC
• Evaluating the effect of calcium phosphate granules that govern the healing process in bone regeneration
• Re-designing manufacturing process to make it robust and scalable

Adjustable Prosthetic Socket For Pediatric Patients | Boston, MA
• Device and Diagnostics Design | Boston University
• Manufactured a low cost, comfortable, adjustable socket for pediatric patients

Environmental Chamber To Test Deformable Mirrors | Boston, MA
• Boston Micro-machines Corporation | Boston University
• Designed an environmental chamber to test deformable mirrors at controlled temperature and humidity
• Focused on the business aspect to construct the most suitable chamber within required budget

Skills

Computer Languages: MATLAB, Python, SolidWorks, FIJI, LabVIEW, Microsoft Excel, Power Point
Laboratory: Confocal Microscope, FTIR, Electrocardiogram stimulation, Gel Electrophoresis, DNA Extraction
Avninder Singh  
Boston, MA | ninder15@bu.edu | 845.444.0453 | linkedin.com/in/avninder-singh/  

**Personal Profile**
I am an enthusiastic and hard-working individual who works well under pressure and is highly motivated. I interact well with others and can work in both groups and on my own initiative using a unique set of technological and personal skills.

**Education**

**Boston University**
Expected Graduation: May 2017
*
*Bachelor of Science in Biomedical Engineering; Minor in Business Administration and Management*

**Work Experience**

**Office of Undergraduate Admissions, Boston University**
Office Assistant
February 2017 – present

- Worked with prospective students about inquires they had about the admissions process via email, phone calls and in-person interactions
- Performed general office duties: filing, staffing the front desk, greeting visitors

**The Iota Club**
Business Development Associate
December 2016 – present

- Evaluated business opportunities, contribute to brainstorming sessions regarding the direction of the company and market demands, and prepare and present presentations
- Worked to build relationships with strategic partners and manage sponsorship opportunities

**Questrom School of Business Executive MBA Office**
Office Assistant
July 2016 – December 2016

- Worked with Microsoft Office, including Word and PowerPoint, to complete data analysis projects, prepare presentations for the office
- Other office duties: print/copy/scan/fax, filing, assembling packets, database organization using Salesforce, data entry/Excel
- Delivered items to on-campus offices and other miscellaneous tasks.

**Skills**

- Computer Skills: Microsoft Word, Excel, PowerPoint, MATLAB, LABVIEW, Python, Salesforce
- Languages: Fluent in English and Punjabi, Knowledge of French and Hindi
- Lab Skills: Gel electrophoresis, Cell culture, Autoclaving
- Biomedical Instrument Knowledge: Oscilloscope (Tektronix TBS 1052B-EDU), Function Generator (Agilent 33210A), Amplifier/Filter Box (iWorx ETH-256), Preamplifier (iWorx C-ISO-255), DAQ (National Instruments BNC-2110), myDAQ

**Activities**

- President, Sikh Association at Boston University (SABU) (2016-present)
- Public Relations Co-Chair, Boston University India Club (BUIC) (2016-present)
- Member, Boston University Bhangra (2016-present)
- Member, Biomedical Engineering Society at Boston University (2013-present)
- Member, BU Society of Asian Scientists & Engineers (2013-present)
PAUL SLIWINSKI
86 Linden Street, Apartment 2   Allston, MA, 02134   (203)-214-7712   pauljsliwinski@gmail.com
linkedin.com/in/paul-sliwinski-100122127

Forward-thinking Biomedical Engineering student with hands-on laboratory experience in a medical setting and a passion for medical devices and procedure. Main experience involving Quality Systems and FDA-related processes.

PROFESSIONAL EXPERIENCE

BETA BIONICS, Boston, MA
Quality Systems & Document Control (Intern), March 2016 – Present
Beta Bionics is developing a bionic pancreas system called the iLet. Their commitment is first and foremost to the community of people living with or affected by diabetes or other conditions of glycemic dysregulation.

• Experienced the product development and process of obtaining FDA approval.
• Various quality assurance tasks and responsibilities including document control and maintenance.
• Managed company file cloud via Google Drive.
• Research and education on technical standards, including the IEC 60601 family.
• Assistance in developing standard test methods for the iLet.

Z-MEDICA, Wallingford, CT
Research & Development (Intern), June 2014 – August 2015
Z-Medica, a leader in the hemorrhage control category, works closely with customers to develop innovative products and solutions. With a relentless concentration on smart growth and ongoing product development, Z-Medica is a company focused on hemorrhage control for healthcare providers, military personnel, first responders and consumers around the world.

• Performed numerous experiments testing the physical integrity and efficacy of Z-Medica hemostatic products at multiple phases of the product life-cycle, from inception through shelf life testing. Prepared product and blood samples, performed the actual tests, collected and tabulated measurements and produced reports of the results.
• Conducted several literature searches and maintained the literature database.
• Helped create a preliminary report for product certification for severe trauma applications in the European market.

EDUCATION

BOSTON UNIVERSITY, Boston, MA

• B.A. in Biomedical Engineering (September 2013 – May 2017)
• Concentration in Technological Innovation
• Dean’s Scholarship recipient

ADDITIONAL SKILLS

• Biological and Engineering Lab Experience
• Data Entry and database maintenance
• Microsoft Office proficiency
• Math and Sciences [Calculus, Statistics, Physics, Chemistry]
• Programming experience [C++, MatLab, HTML]
• Web and tech savvy, require little to no training
Kenny Song

**Education**

**Boston University College of Engineering**, Boston, MA  
Bachelor of Science in Biomedical Engineering  
GPA: 3.10/4.00, Dean’s List


**Engineering Projects**

**SoundMedicine’s Pneumonia Diagnostic Device**  
*September 2016 - Present*

- Creating a telemedicine solution to diagnose pneumonia in developing countries using smartphone capabilities.
- Accepted into 2017 Northeast Bioengineering Conference (NEBEC) to present working prototype of the integrated 3-D printed widget and mobile application capabilities.

**“Electrooculogram Testing of Reflex Delays in response to Various Stimuli”**  
*November 2015-December 2015*

- Designed an experiment to test eye reflexes under different stressors (like caffeine) to understand the human's optimal physiological state.
- Constructed an automated MATLAB program that tested patients in under five minutes and organized the data.

**“BU Campus” Android App**  
*March 2015 – May 2015*

- Collaborated in a team of five to develop an app that locates and interprets the acronyms of the buildings at Boston University and pins the location on Google Maps.
- Available on the Google Play store with 100+ downloads and an average rating of 4.8 stars.

**Experience**

**Behr Process Corporation**, Santa Ana, CA  
Research and Development Summer Intern (Paint Group)  
*May 2015-August 2016*

- Created a new product line for our customer that outperformed present on-the-market options with respect to aesthetic durability (gloss) and adhesive strength.
- Responsible for managing three personal projects including testing up to fifteen key properties per each batch.
- Learned how to formulate interior and exterior paints, with three skews of bases and four types of sheens.

**Four Seasons Tours & Travel Intern**, Irvine, CA  
*May 2014-August 2014*

- Performed administrative tasks and ticketing through Sabre and Apollo/Galileo programs.
- Learned accounting skills through software based programs including Microsoft Excel.

**Affiliations and Activities**

**“Codestellation” Hackathon at Brandeis University**  
*March 2015*

- Placed 2nd in the city-wide competition by creating an android game, “Freakin Colors/Freakin Emojis”.

**Boston University Tennis Club**  
*September 2013 – Present*

- Serving as Secretary in the executive board and managing communications between club and board members.

**Skills**

**Laboratory:** Dissection, Vector Cloning, Circuits  
**Computer:** C++, Matlab, Java, Android Studios, UNIX, Microsoft Office  
**Languages:** Korean

**Interests**  
Tennis, Fitness, Cooking
SUZANNE E. STASIAK  
sstasiak@bu.edu ● (347) 251-7721

School Address  
862 Beacon St, Apt 1  
Boston, MA 02215

Permanent Address  
266-12 82nd Ave  
Floral Park, NY 11004

EDUCATION
Northeastern University College of Engineering, Boston, MA  
Ph.D. in Bioengineering  
Biomechanics and Mechanobiology Track  
Expected May 2022

Boston University College of Engineering, Boston, MA  
B.S. in Biomedical Engineering  
GPA: 3.43  
May 2017

Relevant Coursework  
Systems Physiology, Control Systems Engineering, Molecular Bioengineering, Extracellular Matrix Structure and Function, Product Design and Innovation, Nanometer Scale Processes

RESEARCH EXPERIENCE
Undergraduate Research Assistant  
Summer Term Alumni Research Scholars Program / Senior Design Project  
Respiratory and Physiological Systems Identification Lab, Boston University  
Mentors: Dr. Kenneth Lutchen, Dr. Harikrishnan Parameswaran  
Automated Bioreactor System

• Designed and built system using CAD/CAM in the Engineering Product Innovation Center (EPIC)
• Maintained dissected bovine airway viability for up to two days
• Processed ultrasound data of airways with MATLAB edge-detection software
• Wrote LabVIEW program to impose physiological transmural pressures as well as flush and refresh lumen media

BMES Annual Conference in Minneapolis, Minnesota  
October 2016  
*Design and Implementation of an Automated Bioreactor System to Investigate the Development of Hyperreactivity in Airways*

ENGINEERING PROJECTS
Modular Splint for Remote Areas  
May 2017

• Designed and prototyped a portable splint package with multiple configurations to treat lower leg injuries and restore mobility in remote environments

Extracellular Matrix (ECM) Modeling  
December 2016  
• Wrote MATLAB codes to model nonlinear spring-like components of the ECM and study structure-function relationships

Neonatal Vitals Monitor  
December 2016

• Designed a wireless sensor platform to swiftly and accurately read a neonate’s vital signs

Electrooculogram Computer Mouse Cursor  
December 2015

• Programmed and built an EOG computer mouse cursor using LabVIEW, electrodes, and multiple filter/amplifiers

Fluorescing Biosensor  
May 2015

• Built a fluorescing biosensor to detect gene expression levels in *E. coli* host cells, applying techniques like PCR and gel electrophoresis

Truss Design and Construction  
May 2015

• Designed and built a truss from straws, foam, and metal pins, and wrote MATLAB code predicting the maximum load and point of failure

SKILLS

• Airway Dissection, BSL Safety Cabinet Protocol, Ultrasound, Oscilloscopes, Microscopes, Machining
• Microsoft Office, MATLAB, LabVIEW, SolidWorks, GibbsCAM, Arduino

WORK EXPERIENCE
Brand Representative (part-time)  
July 2015 – Present

Banana Republic, Boston, MA / Manhasset, NY
CONOR L. SULLIVAN

Lynnfield, MA 01940
(781) - 941 - 0499
clsully@bu.edu

Education

Boston University, College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering with Concentration in Technology Innovation
Cum Laude; GPA: 3.48 / 4.00; Dean’s List (Three Semesters)
National Biomedical Engineering Honor Society Alpha Eta Mu Beta Inductee:
Top third of senior class studying biomedical engineering at Boston University

University of Sydney, School of Biomolecular Engineering, Sydney, Australia
Study abroad semester with research internship experience


Skills

➢ Cell culture, DNA cloning, PCR, gel electrophoresis, Immunohistochemistry, ELISA
➢ Various lab skills including: titration, electrochemistry, spectroscopic measuring, calorimetry, solute preparation
➢ Experience with Mass Spectrometry, Liquid & Gas Chromatography, Oscilloscope, ECG & EOG technologies
➢ MATLAB, Excel, PowerPoint, Word; CAD experience in SolidWorks & OnShape; LabScribe, LabVIEW, & iWorx software, ImageJ

Projects

Senior Design; Functionality of P-gp & NOS in Sinonasal Exosomes, Han Neuroengineering Lab, BU
September 2016 – Present
➢ Researching functionality of exosomal NOS & P-gp proteins in sinonasal cell signaling observed during innate immune response to a sinus infection
➢ Aiming to identify the role of these proteins in the sinonasal inflammatory pathway in order to develop more effective treatment options for patients with chronic sinus infections

FDA Regulatory Pathway Product Design
Fall 2016
➢ Designed portable point of care diagnostic device to test for lung cancer by non-invasive respiratory test
➢ Worked through process of bringing device to market by acquiring FDA approval and proposing necessary pre-clinical trials

Concussion Alert Headband & Communication System
Fall 2016
➢ Applied human-centered design process to develop and prototype alert system for detecting and measuring head trauma in athletes playing contact sports in order to quickly evaluate potential concussions

Vestibular Ocular Reflex Frequency Test
Fall 2015
➢ Developed method to measure frequency of vestibular ocular reflex (VOR) in humans using EOG technology to potentially identify various ocular conditions in patients

DNA Cloning & Gene Amplification
Spring 2015
➢ Cloned DNA fragments through PCR, measuring protein and related gene expression of unknown promoter to successfully identify given promoter

Experience

Integrated Polymer and Systems Engineering Lab Group, Sydney, Australia
January 2016 – June 2016
Research Assistant
➢ Researched different methodologies for manufacturing graphene quantum dots (GQDs) and possible applications in the field of drug delivery; currently working on business plan to bring technology to market

PerkinElmer, Waltham, MA
June 2014 – August 2014
Mass Spectrometry Applications Intern
➢ Analyzed data for mass spectrometry department while shadowing scientists in lab, obtaining valuable observatory and hands-on experience with mass spectrometry and liquid and gas chromatography hardware

Boston University Office of the General Counsel, Boston, MA
September 2013 – Present
Office Front Desk Receptionist; Work - Study
➢ Accommodating visitors and various office responsibilities for Boston University's Office of the General Counsel

Affiliations

National Society of Collegiate Scholars
The Order of the Engineer

Boston University Club Baseball Team
University of Sydney Engineering Association

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ERIC TAM
3 Winfield Drive, Parsippany, NJ 07054
ejtam@bu.edu | (973) – 908 – 5269 | https://www.linkedin.com/in/ejtam

EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering
GPA: 3.51 / 4.00
May 2017

Master of Science in Biomedical Engineering
expected May 2019

ENGINEERING PROJECTS

Senior Project – Simplifying 2-Photon Imaging Analysis
September 2016 – Present
- Developed software suite using MATLAB to automate time-intensive image processing of visual data from neuronal activity with poor and/or messy signals to learn more about a less-understood visual pathway
- Collaborated with team to write code, draft reports, and present findings

Sleep Apnea Pillow
September 2016 – December 2016
- Collaborated with team to design a medical device to meet a clinical need and design specifications, including research of materials, manufacturing processes, and testing procedures
- Simulated bringing the product through the FDA regulation pathway and researched relevant prior art for patent development

EXPERIENCE

Student Manager, Starbucks (Aramark), Boston MA
August 2015 – August 2016
- Managed store operations and fellow baristas as acting supervisor on weekends to maintain a clean and smooth-running environment
- Resolved customer disputes to provide a pleasant customer experience
- Led store cleanings to meet standards set by Starbucks and auditing agencies
- Trained new baristas standard techniques and recipes to ensure consistency and accuracy

Barista/Cashier, Starbucks (Aramark), Boston, MA
September 2014 – August 2016
- Familiarized quickly with recipes for standard drinks and new promotional drinks released throughout the year
- Provided a friendly experience for hundreds in a high-volume, fast-paced environment

LEADERSHIP AND COMMUNITY SERVICE

Boston University Filipino Student Association
September 2015 – Present
- Mentored an underclassman to ease his transition to college

Kitchen Volunteer, St. Francis House, Boston, MA
January 2014 – Present
- Prepared and served meals to the homeless community of Boston

HONORS AND ACTIVITIES

Boston University BosTones A Cappella, 2016 ICCA Semifinal Champions
March 2016 – Present

Alpha Eta Mu Beta, National Biomedical Engineering Honor Society
2015

Lambda Beta Pi, National Engineering Honor Society
2014

Boston University Mustard Seed A Cappella
September 2014 – May 2015

Boston University On Broadway
January 2014 – Present
Edward J. Taylor

41 Ashford St, APT 9, Boston, MA 02134

Edward.Taylor1995@gmail.com

410.300.8506

OBJECTIVE
An entry-level Biomedical Engineering position with a focus on medical devices and modeling

EDUCATION
Boston University College of Engineering, Boston, MA
Bachelor of Science, Biomedical Engineering, May 2017

Relevant Coursework
Fluid Mechanics, Medical Imaging, Thermodynamics, Mechanics of Materials, Electric Circuit Theory, Systems Physiology, Neuroengineering, Signals and Systems, Drug Delivery

PROJECTS
Senior Project: Modelling and Measuring Particle Deposition in Asymmetric Airways Using 3D Printing
- Analyzed CT scan of a rat’s airway to better understand physiology of mammalian respiratory system
- Modeled and 3D printed the lungs so as to accurately preserve the morphology of the respiratory system
- Ventilated fluid to analyze how breathing patterns affect particle deposition
- Presente...
Tania W. To

taniato@bu.edu • (617) 653-5881 • linkedin.com/in/taniato
59 Sherbrooke Ave. • Braintree, MA • 02184

EDUCATION

**Boston University, College of Engineering**, Boston, MA  May 2017
Bachelor of Science in Biomedical Engineering
Double Concentration in Technology Innovation and Nanotechnology
GPA: 3.36/4.00; Dean’s List (Three Semesters)

**Technical University of Dresden**, Dresden, Germany  Spring 2015
Studied abroad at a technical university for 20 credits


SKILLS

**Laboratory**: Cell culture, Gel Electrophoresis, PCR, DNA Purification, Restriction Enzyme Digest, Primer Design
**Computer**: MATLAB, C, C++, SolidWorks, AutoCAD, LabVIEW, Microsoft Office

ENGINEERING PROJECTS

**Low-Cost Point-of-Care Diagnostic Chip for Detecting HPV**, Senior Capstone
  - Designed and 3D printed an easy to use, low-cost diagnostic test for testing HPV in low-resource settings

**Transradial Prosthesis Prototype**
  - Prototyped and programmed a transradial prosthesis capable of fine motor movements in individual fingers

**Bioactive and Biodegradable Scaffold for ACL Repair**
  - Developed and evaluated the failure modes of a novel bioactive and biodegradable scaffold for ACL repair

**Ocular-Controlled Cursor**
  - Programmed an ocular-controlled cursor for a computer screen by acquiring an EOG signal from a DAQ board

**Fluorescent DNA Ladder**
  - Created a fluorescent DNA ladder to size bands of HPV strains on a polyacrylamide gel

WORK EXPERIENCE

**Boston University, Klapperich Laboratory for Global Health Technologies**  December 2015 – Present
Research Assistant
  - Developed and prototyped low-cost diagnostic chips
  - Customized assays for detecting HPV 16 and 18

**Boston University, Mechanical Engineering Department**  September 2014 – Present
Teaching Assistant
  - Assist faculty in teaching students how to program in MATLAB
  - Lead discussions, labs, and office hours to solidify students’ understanding

LEADERSHIP AND AFFILIATIONS

**College of Engineering Student Government**, Class President  September 2016 – Present
  - Plan events for the College of Engineering to help students interact in a non-academic setting

**College of Engineering Undergraduate Programs**, Student Advisor  September 2016 – Present
  - Advise freshmen in a weekly lecture alongside faculty to get students acquainted to college and engineering

**Engineering Ambassador for College of Engineering**  September 2014 – Present
  - Lead tours of the College of Engineering for alumni and prospective students and families
  - Represent and assist the College of Engineering in various events

**Theta Tau Professional Engineering Fraternity**, New Member Instructor  November 2014 – Present

**Gamma Phi Beta Sorority**, Collegiate Alumnae Relations Chairwoman  September 2013 – Present

**Biomedical Engineering Society**  September 2013 – Present

**Society of Women Engineers**  September 2013 - Present
BRIAN WEDEN
1122 Commonwealth Avenue, Allston, MA 02134 || Phone: (207) 831-5483 || E-Mail: wedenbr@bu.edu

EDUCATION

Boston University
Bachelor of Science in Biomedical Engineering
- Set to graduate Cum Laude in May, 2017
- Cumulative GPA of 3.64

Technische Universität Dresden
Semester-long study abroad program, February 2015 through July 2015

HONORS and ACHIEVEMENTS

- President of Massachusetts Eta Chapter of Tau Beta Pi, the engineering honor society
- Member of Alpha Eta Mu Beta, the biomedical engineering honor society
- Boston University Presidential Scholar
- Boston University College of Engineering Dean’s List
- Member of the Order of the Engineer

SKILLS

- Proficient with Microsoft Office applications
- Skilled in coding in C/C++, Python and MATLAB
- Experience with utilizing code to work with microcontrollers, namely Arduino boards
- Extensive wet lab experience in the fields of general and organic chemistry
- Experience with processing histological samples for study
- Relevant coursework in human physiology, biomaterials, bioinformatics, software engineering, and control systems

EXPERIENCE

Technical Services
Epic Systems Corporation, Verona, WI
July, 2017 – present
- Will serve as the primary connection between Epic and its clientele.
- Will be responsible for being an expert in specific areas of Epic software, in order to solve clients’ problems.

Peer Tutor
Boston University, Boston, MA
January, 2014 – April, 2017
- Tutored general chemistry to students in need of assistance.
- Worked 8-12 hours a week running individual and group sessions during school semesters while taking a full course load.
- Responsible for retaining mastery of difficult subject knowledge, as well as the ability to effectively pass it on to others struggling with topics.

Research Assistant
Klapperich Lab, Boston, MA
Summer of 2016
- Investigated heating methods to be incorporated into diagnostic devices developed by graduate students in the lab.
- Learned about molecular diagnostic techniques, e.g. qPCR, as well as the similar isothermal approach LAMP.
- Developed a heating mechanism controlled via an Arduino board that used a negative feedback switch to maintain a constant temperature within a medical device.

Research Assistant
Han Lab, Boston, MA
September, 2014 – December, 2014
- Assisted in post-doctoral research on the subject of neurodegenerative disease in the lab of Dr. Xue Han.
- Learned laboratory procedures such as transcardial perfusion (for the euthanasia of lab mice), brain sectioning and mounting, and cresyl staining.
- Grew familiar with tools such as microtomes and staining equipment.
- Prepared necessary tools, solutions, etc. for experiments and post-experimental observation.
Daniel Scott Wiley  
47 Buswell Street, Boston, MA 02215  
404-394-9539  
danswi@bu.edu

Education  
**Boston University**, College of Engineering, Boston, MA  
Bachelor of Science in Biomedical Engineering  
GPA: 3.72/4.00; **Dean’s List** (Six Semesters)  
**Posse Foundation Full-Tuition Leadership Scholarship**  
- Discuss and learn about controversial societal issues  
- Strives to develop contributing members of society  
**Technische Universität Dresden**, Dresden Germany  
- Studied at a German technical institute

Engineering Projects  
**Dispenser of Granular Material**, Benevolent Technologies for Health  
- Consulted with a client from a biotechnology company involved with prosthetics  
- Designed a product to solve problem in collaboration with a team  
- Conceived, designed, and manufactured a device that dispenses granular material into a planar tray, filling it only up to 80 percent  
**Ocular Cursor Software**  
- Created a cursor in collaboration with a team that moved based on ocular motion measured through an EOG  
- Wrote Matlab script that read EOG inputs and translated them into cursor trajectory  
- Ran trials, collecting and analyzing data in order to improve device efficacy

Work Experience  
**Teaching Fellow**, Breakthrough Atlanta  
- Educated students at a summer enrichment program dedicated to closing the achievement gap  
- Constructed lesson plans, managed and maintained classroom environments, and assessed student progress  
- Designed tailored protocols and plans of action for educational and behavioral issues  
- Executed the role of Family Head, ensuring the productivity, effectiveness, and moral of the teaching unit  
Boston University, Chemistry Laboratory  
- Researched in a lab dedicated to drug delivery, materials science, and environmental science  
- Discussed findings and plans of action at meetings with the lab team  
- Learned how to use computer software Igor in order to analyze and organize data  
**Sales Associate**, Urban Outfitters  
- Ensured customer satisfaction, assisted customers through questions and problems, maintained the productivity of fitting rooms

Skills  
Computer: Matlab, Creo, C++, Arduino, Microsoft Office

Clubs and Affiliations  
Engineers Without Borders, National Society of Black Engineers, Boston University Gymnastics Club
EDUCATION

Boston University
College of Engineering
Bachelor of Science
Biomedical Engineering
GPA: 3.35/4.00
Dean’s List

Relevant Coursework
Drugs and Behavior,
Systems Biology of Human Disease, Systems Physiology,
Biomaterials, Biochemistry,
Control Systems,
Engineering Mechanics

SELEcTEd AWARDS & HONORS

Boston University
Undergraduate Research Opportunities Program Award (2016)
Boston University Excellence in Service and Justice Award (2016)

Boston University Global App Initiative

SKILLS & INTERESTS

Laboratory
EMG, EKG,
Acid-Base Titration,
Gel Electrophoresis,
TLC, Distillation

Computer
Vicon Nexus, Visual3D,
MATLAB, GIMP,
iMovie

Languages
Spanish;
Mandarin Chinese comprehension

Interests
Graphic Design, Piano,
Weight Training

RELEVANT PROJECTS

“2-Photon Imaging: Simplifying time and labour-intensive post-experimental data processing”
2016 – Present
  o Program and design an all-in-one MATLAB software package to analyze data generated by 2-Photon fluorescence imaging

“Surface electromyographic activity and motion of the hip during side lying hip abduction in internal and external rotation”
2016 – Present
  o Utilize EMG and kinematic data to capture and evaluate hip abduction muscle activity, analyzing through Vicon Nexus, Visual 3D

WORK EXPERIENCE

Boston University Sargent College, Boston, MA 2015 - Present
Research Assistant, Human Adaptation Lab
  o Processed various gait, hip, and lower body movement data from 180+ human subjects through Vicon Nexus motion capture software
  o Ran data collection trials

Weill Cornell Medical Center, New York, NY 2014 - Present
Research Assistant, Department of Neurology
  o Developed spectrogram display interface for quantitative EEG (qEEG) visualization in seizure detection (pediatric and adult neurointensive care) by non-neurophysiologists
  o Developed training video used by study subjects

PUBLICATIONS


LEADERSHIP & VOLUNTEER EXPERIENCE

Global App Initiative, Boston, MA 2014 - Present
Assistant Director of Operations/Graphic Design Lead
  o Managed and planned all events for 200 organization members
  o Directed iOS and Android wireframe development for Boston’s Rose Fitzgerald Kennedy Greenway Conservancy

Brigham and Women’s Hospital, Boston, MA 2013 - 2015
Volunteer, Medical Specialties Suite and Central Transport Services
  o Served as liaison between patients and clinical staff; trained new volunteers
  o Provided wheelchair transports and specimen delivery to inpatient units and labs

Boston University College of Engineering, Dean’s Host 2014 - Present
Society of Asian Scientists and Engineers (@BU), Mentor/Member 2013 - Present
Boston University Pianists Association, Volunteer Piano Instructor 2013 - Present
Shuoyi (Paul) Yao
250 Hammond Pond Pkwy, Apt 1605S, Newton, MA 02467
syyao@bu.edu • (857) 218-8620

EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering May 2017
Relevant Coursework: Control Systems in Biomedical Engineering, Signal & Systems in Biomedical Engineering, Thermodynamics & Statistical Methods, Engineering Computation, General Chemistry I & II

Clark University, Worcester, MA
Bachelor of Science in Physics Transferred December 2015
GPA: 3.06/4.00; Dean’s List (One Semester)

EXPERIENCE

Internship
Student Internship, Nanjing Huarui Medical Instrument Co., Ltd, China July 2016 – August 2016
• Evaluated and reflected Plant Layout solution
• Advised the development of Work Station, Assembly Flow and Cycle Time Reduction

Assistant Purchasing Manager, HUAWEI Technologies Co., Ltd, China June 2015—August 2015
• Communicated with the cooperative companies and factories to order and sell phone parts
• Checked goods ordered with the list of items and the qualities before warehouse entry
• Attended representatives from cooperative companies and arranged meeting for them with the purchasing department

Engineering Project
Wireless Optical Recording of Neural Activity in Behaving Mice, Boston, MA September 2016 – Current
• Design and assemble the miniature optical components for measuring fluorescence signals derived from brain activity
• Develop and optimize protocols for digital wireless transmission of the neural data to PC

Speaker Recognition, Boston, MA September 2015 – December 2015
• Constructed a matched area speaker recognition algorithm that can accurately identify the speaker and words they are saying
• Comprehended discrete fourier transform, formant analyzing and vowel triangle plotting through MATLAB

Detector of Arm Movement Frequency, Boston, MA January 2015 – May 2015
• Built a medical device that can measure the frequency of arm movement from a ADHD patient
• Comprehended coding skill of Arduino Software & MATLAB
• Designed feature that satisfy the market demand by negotiating with potential customs
• Acquired basic skill to be an Engineer, Engineering code of Ethics and importance of teamwork

SKILLS

Computer: MATLAB, LabVIEW, ImageJ, Java, Adobe Photoshop, MS Office, Pages, Keynotes
Laboratory: Ultrasound Operation, Gel Electrophoresis, PCR, DNA Extraction, Cell Culture Plating, Spectral Unmixing, Image Analysis, Blurring & Deblurring

AFFILIATIONS & HONORS
Unmanned Aerial Vehicle (UAV) Club, Member 2016—Present
Biomedical Engineering Society, Member 2015—Present
Material Science and Engineering Society, Member 2015—Present
William Yen

Education

Boston University
Bachelor of Science in Biomedical Engineering, May 2017

Experience

Boston University: Cruz-Martín Lab
Principle Investigator: Alberto Cruz-Martín, PhD.
Undergraduate Researcher

- Setup, monitor, and maintain all computers and servers in the laboratory
- Organize laboratory and maintain adequate stocks for experiments
- Setup 2-Photon microscope and perform laser alignment
- Developed software to analyze 2-Photon microscopy images more efficiently
- Design, build, and test behavioral setup for testing cognitive abilities of mice
- "How Does Information Encoded in the Activity of Direction-Selective Retinal Circuits Relate to Visual Perception?"
  - Designed and built hardware and software to acquire mouse locomotion data and integrate it with existing signals
  - Performed craniotomies and stereotaxic viral injections with GCaMP in mice
  - Imaged awake head-fixed mice under 2-Photon microscope to study firing patterns in response to visual stimuli
  - Presented findings at the Boston University Undergraduate Research Opportunity Program Symposium (2016)
- "Integration of locomotor activity on direction and orientation selective responses in mouse primary visual cortex"
  - Created Matlab scripts to analyze and compare motion data with neuronal activity to determine if the two signals are correlated

Boston University: Electric Circuits (ENG EK 307)
Undergraduate Teaching Assistant

- Help students understand concepts during discussion sessions
- Teach students to implement concepts learned in class through hands-on experiments in an electronics laboratory

Fallon Ambulance Service
Emergency Medical Technician

- Provide critical emergency care to patients on scene and during transport to the hospital, all while ensuring patient safety and comfort.

New Jersey Governor’s School of Engineering and Technology
Student

- Worked with local power company (PSE&G) to develop a way to measure the charging of electric vehicles as a means of preventing electrical overload by creating a test environment to generate data on electricity usage
- Developed and presented a 30 page business plan for an electric car sharing company to PSE&G, along with corporate and government sponsors

Environmental and Occupational Health Sciences Institute
Lab Assistant/Intern

- “Additional Air Monitoring in Patterson Study”
  - Extracted and analyzed air samples using soxhlet extraction and gas chromatography mass spectrometry
  - Compiled and analyzed air quality data; helped write report submitted to the USEPA
  - Created a report comparing air quality of several industrialized cities across the United States and presented findings at the Liberty Science Center for corporate sponsors

Laboratory Techniques/Skills

Aseptic techniques for inoculating cultures, smear preparation, cell staining, gel electrophoresis, polymerase chain reaction, DNA waveform analysis, oil immersion microscopy, 2-Photon microscopy, aseptic survival surgery, soxhlet extraction, gas chromatography mass spectrometry, organic chemistry, MATLAB, Arduino, Excel, PowerPoint, Presentations, Word, CN milling, PTC Creo, Sketch-Up, analog circuit design, OrCAD

Volunteering/Clinical Experience

Weekly volunteering at the Massachusetts General Hospital
60+ hours working alongside Dr. Steven Young at the Steeplechase Cancer Center in New Jersey
NREMT and Massachusetts EMT-B certification
ZHENGYANG (PAUL) ZHANG
120 Mountfort Street, APT 401 • Boston MA 02215 • (617) 834-6458 • zhzhy@bu.edu • https://linkedin.com/in/paulzzy

Education

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering and Mechanical Engineering May 2017
Concentration in Technology Innovation
G.P.A.: 3.73/4.00, Dean’s List (Six Semesters)

Skills

Technical: MATLAB, SolidWorks, PTC Creo, CNC Milling Machine, 3D printer, and Microsoft Office

Work Experience

Mechanical Engineering Intern, Dentsply Sirona Implants | Waltham, MA Jun 2016 – Jan 2017
• Authored various testing protocols and conducted both mechanical and software tests according to FDA Design Controls for Design Verification and Design Validation
• Responsible for updates to CAD drawings and models using SolidWorks and performed tolerance stack-up analysis for critical and high precision components
• Supported regulatory filings with generation and submissions of engineering drawings
• Assisted with populating and structuring new Product Data Management system for medical device product line using PTC PDMLink/Windchill

Research Assistant, Ritt Neuroengineering Laboratory | Boston, MA Sept 2013-Sept 2016
• Apply neuroengineering principles to understand the function of neural systems; devise strategies for future biomedical applications in neuroscience including brain-machine interface technology
• Performed acute surgery and real time recording of neuron activities with laser stimulation
• Developed MATLAB scripts to analyze data obtained during surgeries and during animal training
• Built hyperdrives to be implanted into animal subject’s brain

Publications and Presentations


Engineering Projects

Disposable Micro Wireless Sensor for Neonatal Monitoring (On-going Senior Project) Fall 2016
• Design and construct batteryless band-aid-sized sensor to measure neonatal heart activity using ECG and transmit wirelessly using RFID technology

GlucoPen Fall 2016
• Led a team of three, designed and constructed an all-in-one glucometer with built-in lancing mechanism and automatic test strip loading mechanism using Solidworks and 3D printing

Shopping Cart for Elderly Fall 2015
• Proposed and built a portable aluminum shopping cart with lifting bottom using machined parts in a team of four
• Tested the mechanism with a wooden prototype, and performed FEA in SolidWorks using parameters provided by the component manufacturers

Awards, Leadership & Community Activities

The Engineering Honor Society Dec 2015– Present
The National Biomedical Engineering Honor Society Nov 2015 – Present
The National Mechanical Engineering Honor Society Nov 2015 – Present
International Peer Mentor at Boston University, Mentor May 2015 – Sept 2015
Undergraduate Research Opportunities Program Award Oct 2014 – Aug 2015
Student Government at The Winchendon School, Secretary Sept 2012 – Jun 2013
Ziqi Zhang

EDUCATION

College of Engineering, Boston University, Boston, MA expected May 2017
Bachelor of Science in Biomedical Engineering
Concentration in Technology Innovation
Cumulative GPA: 3.17

Technische Universität Dresden, Dresden, Germany Spring 2015
Study abroad Dresden engineering program

Relevant Coursework: Business of Technology Innovation, Strategy of Technology Based Firms, Engineering Economy, Device and Diagnostics Design, Product Design and Innovation, Biomedical Measurements, Introduction to Probability

PROFESSIONAL EXPERIENCE

R&D Intern, Qiagen, Waltham, MA June 2016 – Aug. 2016
• Worked with R&D team with a budget of $100,000 to develop novel DNA solutions for GeneReader system
• Conducted performance tests for GeneReader leading to its launch and acquisition of 10% of global sequencer market
• Synthesized and presented weekly research progress to project managers resulting in project meeting all deadlines

Engineering Intern, Thayer School of Engineering, Dartmouth College, Hanover, NH June 2014 – Aug. 2014
• Designed a portable device to detect for breast tumors through spectroscopy using SolidWorks extensively
• Collaborated with senior engineers to draw, print, and machine all components
• Assembled device at Dartmouth-Hitchcock Medical Center for clinical trials to ensure accurate performance

RELEVANT EXPERIENCE

SI482: Strategy of Technology Based Firms Fall 2016
• Simulated a company as CEO to distribute investment across products resulting in a profit of $200 million over 10 years
• Conducted a team analysis of Netflix using various frameworks to identify company strategies and market trends
• Assessed impacts of business strategies and researched industry initiatives of various firms

BE428: Device and Diagnostics Design Fall 2016
• Developed as a team a wearable medical device with the goal of preventing skin cancer utilizing engineering design process
• Collected and analyzed data from a variety of primary and secondary sources, effectively communicated findings to team
• Delivered monthly presentations, sales pitches, and deliverables to peers and professors

SI480: Business of Technology Innovation Spring 2016
• Led team of 4 engineers to create a company and design an innovative solution (Transdermal T-shirt) to healthcare industry
• Created a business plan and 5-year financial projection to pitch to panel of venture capitalists and angel investors
• Analyzed various company sales report and discussed probable causes and possible solutions

ADDITIONAL SKILLS

Languages: Fluent in Mandarin, Basic Proficiency in French
Technical Skills: SolidWorks, MATLAB, SQL, LabVIEW, Lightroom

LEADERSHIP EXPERIENCE

Vice President of Class of 2017, Engineering Government Sept. 2016 - Present
• Created social events with an annual budget of $2000 for all engineering undergraduates

Dean’s Host, College of Engineering Sept. 2014 - Present
• Guided prospective students and families around campus and assisted engineering advisors with new student activities

Vice President of Communications, Sigma Phi Epsilon Nov. 2014 - May 2016
• Increased social media presence over 200% through public relations management
Zhiqian Zhou

(857) - 222 - 2271 | zqzhou@bu.edu | 120 Mountfort Street, 401, Boston, MA 02215

**CAREER OBJECTIVE**
Motivated biomedical engineering senior student with comprehensive technical and team working skills trained in Boston University looking for an entry-level work in either biomedical or pharmaceutical industry. Endeavor and dedication in providing contribution to the team will be helpful in achieving the company’s goals and profits.

**PROFESSIONAL EDUCATION**

<table>
<thead>
<tr>
<th>School Name</th>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston University College of Engineering</td>
<td>Boston, MA</td>
<td>9/2013 – 5/2017</td>
</tr>
<tr>
<td>Shanghai No.3 Girls’ High School</td>
<td>Shanghai, China</td>
<td>9/2010 – 7/2013</td>
</tr>
</tbody>
</table>

**KEY SKILLS**
MATLAB, LabView, iWorx and LabScribe 2, Basic C++ Programming
Oscilloscope, Signal generator equipment, Basic circuit design, FMEA analysis
Global thinking, Good attention to detail, Motivation to learn
Fluent Japanese

**PROFESSIONAL EXPERIENCE**

<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Location</th>
<th>Dates</th>
<th>Responsibilities</th>
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</thead>
<tbody>
<tr>
<td>Shanghai National Pharmaceutical Engineering Research Center</td>
<td>Shanghai, China</td>
<td>June 2016 – July 2016</td>
<td>Researched relevant topics and gathered information and data for lab designing. Performed laboratory tests including pre and post analytic phases. Prepared samples for test trials and produced accurate and reliable data. Interpreted results and followed methodologies in carrying routine tasks.</td>
</tr>
</tbody>
</table>

**ACADEMIC PROJECT**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Dates</th>
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</thead>
<tbody>
<tr>
<td>Micro Battery-Free Wireless Sensor for In-hospital Neonatal Monitoring</td>
<td>Fall 2016 – Spring 2017</td>
</tr>
</tbody>
</table>
A neonatal monitoring design specifically meets the needs of normal nursery to monitor the newborn’s heart rate wirelessly and continuously with low cost and high usability. Experienced with establishing objectives, researching on radio-frequency identification technology, and providing support to team members for developing the device and software as a good team player.

**HackJack C++ Programming**
Spring 2016
A gaming program based on established statistical results of blackjack strategy, which is able to assist user to increase the ace rate when playing blackjack. As one of the main code, algorithm developer, and leader, I experienced with coding in three different languages, combing the codes in final stage, and communicating with team members to inspire motivation.

**Determination of the Viability of Cyclic Voltammetry**
Spring 2014
Cyclic voltammetry, a low cost, electrochemical technique was researched in the Freshman year capstone project. The viability of cyclic voltammetry was compared to that of UV-Vis spectrophotometry quantitatively, in order to determine the feasibility of using this technique to analyze trace amount of compounds in underdeveloped countries with lower cost, and higher accuracy.
EDUCATION

Boston University College of Engineering, Boston, MA
Bachelor of Science in Biomedical Engineering
GPA: 3.54/4.00
Dean’s List

Related Coursework: Business Technology Innovation, Strategy for Technology-Based Firms, Product Design & Innovation, Device and Diagnostic Design, Senior Design Capstone Project

PROJECTS

Lesion-Specific QCT to Improve Prediction of Pathologic Vertebrae Fracture Load – Senior Project
Spring 2016-Spring 2017
- Characterize the effect of lytic and blastic metastases on the architectural and mechanical properties of human vertebral bone via clinical and Xtreme CT scans as part of a three member team

Business Technology Innovation Course Project – Surface Solutions Irrigation Controller
Spring 2016
- Led a multidisciplinary team dedicated to making surface irrigation techniques more efficient
- Conducted market research of the irrigation market and developed a business model based on other facets of the business ecosystem

Project Lead the Way - Senior Design Project
2012-2013
- Designed a method to extract lead oxide and other harmful chemicals present in cathode ray tubes in order to eliminate negative effects on environment as a part of a three member team

SKILLS

- Software: Microsoft Office, MATLAB, AutoCAD
- Languages: Conversational in Spanish and Greek

LEADERSHIP AND AFFILIATIONS

Kappa Sigma Fraternity
Grand Procurator (Vice President)
- Oversee and coordinate with the Scholarship Chair on resume workshops and scholarship opportunities
- Organize and head the Judicial Board as well as all disciplinary matters within the fraternity

Rudy A. Ciccotti Family Recreation Center
Basketball League Coordinator/Camp Counselor
- Organized and coordinated four youth basketball leagues for first through ninth graders four nights a week
- Led camps with up to 60 kids and organized several activities for campers and fellow counselors

The Order of the Sons of Pericles
President
- Managed a $15,000 budget and raised $7,500 through fundraising events which was donated to the Friedrich’s Ataxia Research Alliance, a life-shortening disease that causes progressive damage to the nervous system

Tau Beta Pi Engineering Honor Society
Massachusetts Eta Chapter
- 2016-Present

COMMUNITY ACTIVITIES

Capital City Rescue Mission
- Prepare and serve dinners at the Capital City Rescue Mission homeless shelter

St. Sophia Greek Orthodox Church Sunday School Teacher
- Planned and taught 1st grade religion lessons
EDUCATION

Boston University, Boston, MA
Bachelor of Science in Biomedical Engineering - May 2017
Bachelor of Arts in Psychology

Dana Hall School, Wellesley, MA
College Preparatory Program with Advanced Placement. Student Leader Program: Dormitory Proctor, Boarding Student - June 2012

PROJECTS

Independent Global Health Biomedical Project, Boston, MA
Research project with Dr. Zaman to relieve mental health conditions within the Syrian Refugee Crisis - January 2016 – Present
- Assessed conditions at a Refugee Settlement in Lebanon to clearly identify present challenges, such as malnutrition and PTSD
- Conducted extensive research and on-site meetings with four primary contacts to address mental health through nutrition in Refugees, particularly Omega-3 Fatty Acids
- Initiated a project plan to develop a mobile app to diagnose major depression amongst Refugees due to the lack of demographics related to mental health

Sustainable Sterile Surgery Project, Boston, MA
- Developed a need statement that led to a sustainable design reducing high post-operative infection rates by 87%
- Devised an electrical circuit with a switch to control overloading the battery between the solar panel or hand-crank
- Programmed an Arduino to time the sterilization cycles to prevent harmful contact with UV light
- Created the Failure Mode and Effects Analysis (FMEA) to address potential risks and planned FDA classification and pathway

RESEARCH EXPERIENCE

Nazarian Lab, Beth Israel Deaconess Medical Center, Boston, MA
Laboratory Intern working on the in-vivo assessment of tendon tear progression - September 2016 – Present
- Established a mechanical testing device and protocol to mimic real-life tendon tear propagation to study in-vivo biological healing
- Redesigned a surgically invasive tendon fixation device to a non-invasive external fixation to eliminate laboratory intervention
- Programmed a MatLab script to model tendon fatigue as a function of force, number of loads, force rate and biological regeneration

Center of Alzheimer’s Research and Treatment, Brigham and Women’s Hospital, Boston, MA
Research Trainee Intern working on the A4, Eisai and Solanezumab Clinical trials - March 2015 – May 2016
- Assisted and provided feedback to Dr. Nancy Donovan from shadowing her Clinic Consultations and analyzed the patient history
- Managed phone screenings with patients presenting with Alzheimer’s precursors and scheduled visits with respective Physicians
- Administered and accurately recorded subject vitals and ECGs before observing patient visits
- Programmed an excel sheet to automatically synchronize appointment documents with Microsoft Outlook Calendar entries that saved an hour of work per day and led to my promotion

Massachusetts General Hospital Institute of Healthcare professionals, Charlestown, MA
Research Intern working on the Harvard Aging Brain Study (HABS) - January 2014 – February 2015
- Interviewed and coordinated subject third-year visits; the critical year where subjects begin to present Mild Cognitive Impairment
- Performed semi-annual data checks for previously entered data, and improved data accuracy by 33%
- Engaged in weekly journal meetings with physicians and research assistants about current and relevant studies

VOLUNTEER AND LEADERSHIP EXPERIENCE

Engineering World Health Organization, Boston, MA
Treasurer of Boston University’s Chapter - May 2016 – Present
- Manage the chapter’s funding and annual budget to meet chapter dues, purchase EWH kits and schedule speakers
- Promoted the organization at an event, recruiting 89 new members, and directed weekly club and Executive Board meetings

MASH: Make A Stranger Happy, Boston, MA
Founder of Peru based NGO aimed to ameliorate living standards at an orphanage in Cusco, Peru - July 2015 - Present
- Collect donations from 15 countries, organize inventory and manage shipments to the various project locations
- Tutored and organized study schedules for children, which increased 81% of the student’s grades

Posta Ttio Centro De Salud, Public Clinic, Cusco, Peru
Medical Intern in Pediatrics, Emergency Room, Internal Medicine and Ear, Nose and throat Specialists (ENT) - June - July 2014
- Established a schedule to prioritize the eldest unvaccinated children due to the limited supply and vaccinated them
- Took and assessed vital signs, recorded patient symptoms and presented my patient diagnoses to the resident supervisors

SKILLS

Proficient in Microsoft Office: Word, Excel, PowerPoint, DataCentral, PeopleSoft, MATLAB, Arduino. Trained in SOLIDWORKS.
Fluent in English, Spanish, French and Arabic. Beginner in Italian.
Interests: oil painting, playing the violin, horse riding, traveling, cycling, swimming and skiing
Finite Element Analysis of Muscle Trauma: Von Mises Stress at Maximum Deformation

Photo Credits
Top: William Yen, Sherry Yan, and Eric Tam
Middle: Blake Oberfeld, Jaclyn Renee Grode and Kathryn Hardin
Bottom: Yash Agarwal, Nikita Patil, Kathleen Ryan