Graduate level Thesis, Project or Company Lead R&D Project
Class Objectives

- Prepare you to be a system engineer by understanding
  - Product formation: how can you take an idea and make it into a product
  - Product analysis: competitive analysis, landscape analysis
  - Development of use cases
  - Use Case Development: Translation of use cases into system and engineering requirements resulting in system architecture
  - Product Testing: How to test your product
  - Concept Validation: How to validate concepts
  - After-launch: Maintain, monitor and upgrade products

- Agile development

- Being part of a Team, leading a team and public presentation

- Utilizing resources in building products: Open Source, Cloud and third parties
Class Style

- **Self-learning**
  - You need to research, read and train yourself with help from us.

- **Agile Learning and development**

- **Every lecture includes**
  - Presentation (in class: 30 minutes)
  - Working Example (in class: 30 minutes)
  - Working together on your Homework or project (online: 30 minutes)

- **Multi-team collaboration**
  - Code Reviews
  - Acceptance Report

- Very interactive and you need to present

- Always have your computer with you in class
BU takes academic integrity very seriously. Academic misconduct is conduct by which a student misrepresents his or her academic accomplishments, or impedes other students’ opportunities of being judged fairly for their academic work. Knowingly allowing others to represent your work as their own is as serious an offense as submitting another’s work as your own. More information on BU's Academic Conduct Code, with examples, may be found at

http://www.bu.edu/academics/policies/academic-conduct-code
Collaboration Policy (copied and modified from Prof. Clem’s email)

- This is a research and project based class. You can use solutions developed in open source or other research papers. However,
- you must clearly reference them. You MUST include the reason you used their work and give them clear credit for using their work.
- You should follow the open source license of any work you may use. If they don’t allow using their work, do NOT use it.
- You must clearly acknowledge all your sources (including your collaborators).
- You must write all reports and papers in your own words (although Java code may be shared with your collaborator).
- You may not use any human resource outside of class (including web-based help services, outside tutors, etc.) in doing your homeworks or project.
- Failure to meet any of the above conditions could constitute plagiarism and will be considered cheating in this class. If you are not sure whether something is permitted by the course policy, ASK ME! (it’s much more awkward to explain your actions after the fact to the college disciplinary committee).
LLM ChatGPT

- In this class, you can use ChatGPT (or equivalent) as an assistant and SW engineer colleague or co-pilot
- You must cite and include your co-pilot contributions
- There will be exercises during the class that will ask you to use ChatGPT and analyze the results
Class Plan

- In class will be for 1 hour
- We will have open office hours for support
- We will have a teaching assistant assigned for groups
- Introduce the ambassadors
All online

- All your homeworks, documents and projects must be on GitHub
- Your GitHub account is required
- The next week, focus on becoming familiar with Github and principles of code management and agile development
Class Plan

Team Project (Teams of three)

- **Project 1**
  - Product and research review
  - Major Open-Source project case study

- **Project 2**
  - Product mission,
  - User Story
  - APP using third party systems

- **Project 3**
  - Societal Impact of Technology

- **Project 4**
  - Seminar Review

Group Discussions
Project 1 Expectations

- You need to explore the latest research areas in the topic and summarize them.
- You need to at least pick one paper and review it in detail.
- Propose next steps if you were to work on this topic in the future.
  - Included, who is the target user/application and what does this impact your proposal
- I also would like you to ask ChatGPT to write the same paper and analyze their output and provide it as part of the sections of your overall paper.
- Size of the paper: No limit but a good guide to cover a topic well is to if you use IEEE Transactions format, it will be 5+ pages
Team Projects

● We will start with Step 1 (project 1), which is an individual project.
● After Project 1 is completed, teams will be formed based on your interests
● Details:
  ○ Please select one of the projects.
  ○ Use the following form for you project selection
  ○ If you have your own idea, please use the form to propose it.
  ○ Deadline for selection is Sunday September 9th 5:00 PM EST.
## Grading

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
<th>Grade</th>
<th>Totals</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team Grade</strong></td>
<td>Sprints</td>
<td>20%</td>
<td>40%</td>
<td>Main criteria is effort during the sprint period.</td>
</tr>
<tr>
<td></td>
<td>Final Deliverable</td>
<td>20%</td>
<td></td>
<td>Main criteria is poster presentation, your overall effort during the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>project</td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td>Project 1: Literature and Product Review</td>
<td>15%</td>
<td></td>
<td>Main criteria is covering the main areas the report requires</td>
</tr>
<tr>
<td></td>
<td>Project 2: Use case development</td>
<td>10%</td>
<td></td>
<td>Will be defined during user stories lecture</td>
</tr>
<tr>
<td></td>
<td>Project 3: Societal Paper</td>
<td>10%</td>
<td></td>
<td>Will be defined during societal impact lecture. Part of the grade is</td>
</tr>
<tr>
<td></td>
<td>Project 4: Seminar Review</td>
<td>10%</td>
<td></td>
<td>for group presentation.</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>15%</td>
<td>60%</td>
<td>Pick any scientific seminar, attend it and do a thorough literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>review of it.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>100%</td>
<td>Attendance and in lecture group discussions and presentations</td>
</tr>
</tbody>
</table>
Seminar Review

- I copied it from Senior Design Professor Pisano.
- Objective: literature review of a topic and understand it well. It is like Project 1 but focused on an area that people have worked on and achieved results.
- Expectations:
  - Pick a seminar, presentation, PhD defense, etc in BU our outside BU and attend it
  - Read the related papers and work
  - Write a paper summary describing
    - Topic
    - Main contributions
    - Results
    - Your view of the work
    - What would you do as next steps
- Due Date: submit it before December 3rd 2023 (No deadline extension).
- Resources
  - BU ENG events
  - BU CISE events
  - BU College of Computing and Data Sciences Events
  - MIT Media Lab Events
Due Date:  9/17/2022
Submission

- Your work must be all done in your GitHub repository
- Put links to your documents in your GitHub repository
- Due Dates: **Sunday September 17th, 2023**
Plan

● Due Saturday 9/9/2023 end of day (https://forms.gle/qvtGrpU3WFdT3Vg37 ) and in your own google drive, start working on:
  ○ Every Student would have completed: Problem Statement, Application and an initial list of papers and open source projects to study.
  ○ Create a GitHub account
  ○ Upload their findings to Google Drive (https://drive.google.com/drive/folders/1G1xtm6t9K4dQ79CsrXKgvQ88Yd8ijfyr?usp=sharing) in a document. The document name should be: Topic_YourFirstName_YourLastName

● On Monday 9/11/2023, Osama will create groups to discuss their findings together
● On Wednesday, 9/13/2023, each group will present their findings to the class
● On Sunday, 9/17/2023, each student will submit their final project 1.
● On Monday 9/18/2023, we will publish list of projects and team selection criteria
Please

- GitHub assignment: Go to blackboard and provide link to your GitHub
First Exercise
Target of the project is key

I want you to think about the impact of the target user or scenarios on what you expect from the product or algorithm

- Person Detection
- Skin cancer detection
- Auto-pilot

Pick a topic and work in group of three for 15 minutes then let’s discuss
A2 Section: I apologize I need to reschedule class on Monday 9/11 because of an important Doctor appointment.

Is it ok to meet 8-10AM the same day?

Thank you so much
Thank you