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CURRICULUM VITAE

Name: Uri Tzvi Eden

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Website: http://math.bu.edu/people/tzvi/ **Fax:** (617) 353-8100

Place of Birth: Haifa, Israel
Citizenship: U.S.

Education:

1999	B.S.	Double Major in Mathematics and in Engineering and Applied Sciences, California Institute of Technology, Pasadena, CA.
2002	S.M.	Engineering Sciences, Harvard Division of Engineering and Applied Sciences, Cambridge, MA and Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA
2005	Ph.D.	Engineering Sciences, Harvard Division of Engineering and Applied Sciences, Cambridge, MA and Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA

Postdoctoral Training:

2005-2006	Research Associate, Statistical Neural Data Analysis, Neuroscience Statistics Research Laboratory, Massachusetts General Hospital, Charlestown, MA

Institutional Appointments:

2012-present	Associate Professor, Department of Mathematics and Statistics, Boston University, Boston, MA
2006-2012	Assistant Professor, Department of Mathematics and Statistics, Boston University, Boston, MA
2006	Research Fellow, Department of Anesthesia and Critical Care, Massachusetts General Hospital, Boston, MA
2006	Research Affiliate, Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA
2006	Visiting Scholar, Massachusetts Institute of Technology, Cambridge, MA
2005-2006	Post-Doctoral Fellow, Harvard Medical School, Boston, MA

Other Professional Positions and Major Visiting Appointments:

1996-1999	Teaching Assistant, Division of Physics, Mathematics & Astronomy, California Institute of Technology, Pasadena, CA

1998-1999	Teaching Assistant, Division of Engineering & Applied Sciences, California Institute of Technology, Pasadena, CA
2000-2005	Research Associate, Neuroscience Statistics Research Laboratory, Massachusetts General Hospital, Charlestown, MA
2001-2003	Teaching Fellow, Division of Engineering & Applied Sciences, Harvard University, Cambridge, MA
2004-2011	Lecturer and Teaching Assistant, Neuroinformatics Summer Course, Marine Biological Laboratories, Woods Hole, MA

Committee Assignments:

2006-2013	Graduate Admissions Committee Department of Mathematics and Statistics
2007-2013	Faculty Hiring Committee Department of Mathematics and Statistics
2008-2013	Website Committee (Chair) Department of Mathematics and Statistics
2011-2013	New Building Committee (BK-1) Department of Mathematics and Statistics
2012-2013	Communications and Collaborations Committee Boston University

Awards and Honors:

1994	National Tournament Winner, Physics Lab and Circuit Lab Competitions, Science Olympiad, University of Arizona, Tucson, AZ
1995	National Merit Scholar Finalist
1998-1999	Carnation Undergraduate Merit Scholarship
1999	NSF Graduate Research Fellowship
2009	BU Metcalf Award Nominee

Reviewer for following academic journals:

- Bayesian Analysis
- Statistics in Medicine
- Network: Computation in Neural Systems
- Journal of Neural Engineering
- Neural Computation
- Annals of Applied Statistics
- Transactions on Neural Systems & Rehabilitation Engineering
- Journal of Neuroscience: Methods

Review Panels:

2008	NSF Collaborative Research in Computational Neuroscience Review Panel
2012	NSF Collaborative Research in Computational Neuroscience External Reviewer
2013	NSF Collaborative Research in Computational Neuroscience Review Panel

Research Funding:

(Currently PI/CoPI on active awards totaling $5.9M)

1999-2002 NSF Graduate Research Fellowship

2002-2005 NIH/NIDA R01 DA015644; Researcher; Dynamic Signal Processing Analyses of Neural Plasticity.

2003-2004 Medical Engineering / Medical Physics Fellowship, Harvard-MIT Division of Health Sciences and Technology

2007-2012 NSF CAREER IIS-0643995; Principal Investigator; Statistical Analysis of Neural Spiking Data

2008-2009 Boston University Center for Neuroscience Working Group Seed Funding

2009-2011 NIH/NINDS R21 NS062317-01A2; Statistical Consultant; Recovering from chronic brain damage by transcranial direct current stimulation.

2010-2015 NIH/NINDS R01 NS073118; Principal Investigator; CRCNS: Hitting the spot: Optimizing placement of deep brain stimulating electrodes.

2011-2016 NIH/NINDS R01 NS072023; Multiple Principal Investigator; Multiscale analysis and modeling of spatiotemporal dynamics in human epilepsy (PI – Kramer).

2011-2014 NSF DMS-1042134; Co-Principal Investigator; Cognitive rhythms collaborative: A discovery network (PI – Kopell).

Teaching:

Undergraduate Courses/Graduate School Courses:

Boston University:

2006 MA 881, "Seminar on the Statistical Analysis of Point Process Data"
2007-2010 MA 583, "Introduction to Stochastic Processes"
2007 MA 979, "Directed Study" on Real and Complex Analysis
2007 MA 980, "Directed Study" on Measure Theoretic Probability
2007,09,12 MA 568, "Statistical Analysis of Point Process Data"
2008 MA 991, "Directed Study" on Game Theory Analysis Methods
2008-2009 MA 214, "Applied Statistics"
2009-2012 MA 213, "Basic Statistics and Probability"
2011-2012 MA 576, "Generalized Linear Models"
2011 MA 582, "Mathematical Statistics"
2011 MA 681, "Accelerated Introduction to Statistical Methods for Quantitative Research"

Marine Biological Laboratories, Woods Hole, MA:

2004-2012 Faculty, Neuroinformatics Summer Course, Marine Biological Laboratories, Woods Hole, MA.

Student supervision:

Boston University:

Thesis Advisor:

2006-2010 Ph.D. advisor for Michael Prerau, Ph.D. 2010, Program in Neuroscience. Currently: Post-doctoral researcher, Department of Anesthesia and Critical Care, Massachusetts General Hospital.

2007-2010 Ph.D. advisor for Yifei Huang. Ph.D. 2010 Department of Mathematics and Statistics. Currently: Quantitative analyst, State Street Corporation, Boston, MA

2007-2012 Ph.D. advisor for Liang Meng. Current graduate student, Department of Cognitive and Neural Systems.

2008-present Ph.D. advisor for Eugene Zaydens. Current graduate student, Graduate Program in Neuroscience.

2012-present Ph.D. advisor for Xinyi Deng. Current graduate student, Department of Mathematics and Statistics

Thesis Committee Member:

2008-2011 Ph.D. Committee member for Mark Brandon, Ph.D. 2011, Department of Psychology.

2009-2012 Ph.D. Committee member for Jiahui Liu, Ph.D. 2012, Department of Biomedical Engineering.

2012 Ph.D. Committee member for Kishan Gupta. Ph.D. 2012. Department of Psychology.

Other Institutions:

2006-2007 Ph.D. committee member for Anne Dreyer, Ph.D. 2007, Harvard/MIT Health Sciences and Technology Department.

2006-2009 Ph.D. committee member for S.R. Prakash, Ph.D. 2009, Harvard/MIT Health Sciences and Technology Department.

Publications:

Original Reports:

1. Frank LM, **Eden UT**, Solo V, Wilson MA, Brown EN. Contrasting patterns of receptive field plasticity in the hippocampus and the entorhinal cortex: an adaptive filtering approach. *Journal of Neuroscience* 2002, 22:3817-30.

2. **Eden UT**, Frank LM, Solo V, Brown, EN. Dynamic analyses of neural encoding by point process adaptive filtering. *Neural Computation*, 2004, 16(5), 971-998.

3. Truccolo W, **Eden UT**, Fellows MR, Donoghue JP, Brown EN. A point process framework for relating neural spiking activity to spiking history, neural ensemble, and extrinsic covariate effects. *Journal of Neurophysiology*, 2005, 93(2):1074-1089.

4. **Eden UT**, Truccolo W, Fellows MR, Donoghue JP, Brown EN. Reconstruction of Hand Movement Trajectories from a Dynamic Ensemble of Spiking Motor Cortical Neurons. *Proceedings of the* 26th *IEEE International Conference of the Engineering in Medicine and Biology Society*, 2004, 2:4017-4020.

5. Srinivasan L, **Eden UT**, Willsky AS, Brown EN. Goal-directed state equation for tracking reaching movements using neural signals. *Proceedings of the 2nd International IEEE EMBS Conference on Neural Engineering*, 2005, 352-355.

6. Srinivasan L, **Eden UT**, Willsky AS, Brown EN. A state-space analysis for reconstruction of goal-directed movements using neural signals. *Neural Computation*, 2006, 18:2465-2494.

7. Wagner T, Fregni F, **Eden UT**, Ramos-Estebanez C, Grodzinsky A, Zahn M, Pascual-Leone A. Transcranial magnetic stimulation and stroke: a computer-based human model study. *Neuroimage*. 2006; 30(3):857-70.

8. Ergun A, Barbieri R, **Eden UT**, Wilson MA, Brown EN. Construction of point process adaptive filter algorithms for neural systems using sequential Monte Carlo methods. *IEEE Transactions on Biomedical Engineering*, 2007; 54(3):419-428.

9. **Eden, UT** & Brown, EN. Continuous-Time Filters for State Estimation from Point Process Models of Neural Data. *Statistica Sinica*, 2008; 18(4):1293-1310.

10. Srinivasan L, **Eden UT**, Mitter SK, Brown EN. General purpose filter design for neural prosthetic devices. *Journal of Neurophysiology*, 2007; 98:2456-2475.

11. **Eden UT**. Point process adaptive filters for neural data analysis: theory and applications. *Proceedings of the 46th IEEE Conference on Decision and Control,* 2007, 5818-5825

12. Czanner G, Dreyer A, **Eden UT**, Wirth S, Lim HH, Suzuki WA, Brown EN. Dynamic models of neural spiking activity. *Proceedings of the 46th IEEE Conference on Decision and Control,* 2007, 5812-5817.

13. Prerau MJ, **Eden UT**, Smith AC, Yanike M, Suzuki WA, Brown EN. A mixed filter algorithm for cognitive state estimation from simultaneously recorded continuous-valued and binary measures of performance. *Biological Cybernetics*, 2008; 99:1-14.

14. Wagner T, **Eden UT**, Fregni F, Ramos-Estebanez C, Valero-Cabre A, Pronio-Stelluto V, Grodzinsky A, Zahn M, Pascual-Leone A. Transcranial magnetic stimulation and brain atrophy: a computer-based human brain model study. *Experimental Brain Research*. 2008; 186:539-550.

15. Czanner G, **Eden UT**, Wirth S, Yanike M, Suzuki WA, Brown EN. Analysis of between-trial and within-trial neural spiking dynamics. *J. Neurophys.*, 2008; 99:2762-2693.

16. **Eden UT**, Brown EN. Mixed observation filtering for neural data. *Proceedings of the 33rd IEEE International Conference on Acoustics, Speech, and Signal Processing,* 2008, 5201-5203

17. Huang Y, Brandon MP, Griffin AL, Hasselmo ME, **Eden UT**. Decoding movement trajectories through a T-maze using point process filters applied to place field data from rat Hippocampal region CA1. *Neural Computation*. 2009, 21(12):3305-3334.

18. Prerau MJ, Smith A, **Eden UT**, Kubota Y, Yanike M, Suzuki W, Graybiel A, Brown EN. Characterizing learning by simultaneous analysis of continuous and binary measures of performance. *J. Neurophys.* 2009, 102: 3060-3072.

19. Kubota Y, Liu J, Hu D, Decoteau WE, **Eden UT**, Smith AC, Graybiel AM. Stable Encoding of Task Structure Coexists with Flexible Coding of Task Events in Sensorimotor Striatum. *J Neurophysiol.* 2009, 102(4): 2142 – 2160.

20. Wagner T, Rushmore J, **Eden UT**, et al. Biophysical foundations underlying TMS: Setting the stage for an effective use of neurostimulation in the cognitive neurosciences. *Cortex*, 2009; 45(9): 1025-1034.

21. Koyama S, **Eden UT**, Brown EN, Kass RE. Bayesian decoding of neural spike trains. *Annals of the Institute of Statistical Mathematics*. 2010, 62(1): 37-59.

22. Kramer MA, **Eden UT**, Cash SS, Kolaczyk ED. Network inference – with confidence - from multivariate time series. *Phys. Rev. E* 2009, 79(6):061916.

23. Sarma SV, **Eden UT**, Cheng M, Williams Z, Eskandar EN, Brown EN. Using Point Process Models to Determine the Impact of Visual Cues on Basal Ganglia Activity and Behavior of Parkinson's Patients. *Proceedings of the 48th IEEE Conference on Decision and Control,* 2009, 7716-7722.

24. Kramer MA, **Eden UT**, Kolaczyk ED, Zepeda R, Eskandar EN, Cash SS, Coalescence and Fragmentation of Cortical Architecture During Focal Seizures. *Journal of Neuroscience*, 2010, 30 (30):10076-10085.

25. **Eden UT**, Kramer MA. Drawing inferences from Fano factor calculations. *Journal of Neuroscience Methods*, 2010, 190(1):149-152.

26. Prerau MJ, **Eden UT**. A General Likelihood Framework for Characterizing the Time Course of Neural Activity, *Neural Computation*, 2011, 23(10): 2537-2566.

27. Meng L, Kramer MA, **Eden UT**. A sequential Monte Carlo approach to estimate biophysical neural models from spikes. 2011, *Journal of Neural Engineering*, 8(6):065006

28. Lepage KQ, Kramer MA, **Eden UT**. The dependence of spike-field coherence on expected intensity. *Neural Computation*, 2011, 23(9):2209-2241.

29. MacDonald CJ, Lepage KQ, **Eden UT,** Eichenbaum HB. Hippocampal "time cells" bridge the gap in memory for discontiguous events. *Neuron*, 2011. 71(4):737-749.

30. Lepage KQ, MacDonald CJ, Eichenbaum HB, **Eden UT**. The statistical analysis of partially confounded covariates important to neural spiking. *J. Neurosci. Methods*, 2012, 205: 295–304

31. Wagner T, Rushmore J, Russo CJ, **Eden UT**, Simon S, Rotman S, Pitskel NB, Grodzinsky A, Zahn M, Pascual-Leone A, Valero-Cabre A. Impact of brain tissue filtering on neurostimulation fields: a modeling study. *Neuroimage*. Accepted. 2013

32. **Eden UT**, Gale J, Amirnovin R, Eskandar EE. Characterizing the dynamics of subthalamic nucleus neurons in Parkinson's disease. *Frontiers in Neurosci.* 2012 6:28

33. Sarma SV, Cheng ML, **Eden UT**, Williams Z, Brown EN, Eskandar EE. The effects of cues on neurons in the basal ganglia in Parkinson's Disease. *Frontiers in Neurosci.* 2012 6:40

34. Lepage KQ, Gregoriou GG, Kramer MA, Aoi M, Gotts SJ, **Eden UT**, Desimone R. A procedure for testing across-condition rhythmic spike-field association change. *Journal of Neuroscience Methods*, 2013, 213(1):43-62

35. Kramer MA, Truccolo W, **Eden UT**, Lepage KQ, Hochberg LR, Eskandar EN, Madsen JR, Lee JW, Maheshwari A, Halgren E, Chu CJ, Cash SS. Human seizures self-terminate across spatial scales via a critical transition. *PNAS*, 2012, 109(51):21116-21

36. Lepage KQ, Kramer MA, **Eden UT**. Some sampling properties of common phase estimators. *Computational Neuroscience*, 2013, 25(4):901-21

37. Zaydens E, Taylor A, Cohen M, **Eden UT.** Characterization and modeling of muscle sympathetic nerve spiking. *IEEE Trans. Biomed. Eng.*, 2013, 60(10):2914-2924

38. Gerhard F, Kispersky T, Gutierrez GJ, Marder E, Kramer MA, **Eden UT**. Successful prediction of a physiological circuit with known connectivity from spiking activity alone. *PLOS Computational Biology*. 9(7): e1003138, 2013.

39. Kramer MA, **Eden UT**. Assessment of cross-frequency coupling with confidence using generalized linear models. Journal of Neuroscience Methods, 2013, 220(1):64-74

40. Deng X, Eskandar EN, **Eden UT**. A point process approach to identifying and tracking transitions in neural spiking dynamics in the subthalamic nucleus of Parkinson's patients. *Chaos*, Accepted. 2013

41. Stephen EP, Lepage KQ, **Eden UT**, Brumberg JS, Geunther FH, Kramer MA. Assessing dynamics, spatial scale, and uncertainty in task-related brain network analyses. Submitted. 2013

42. Wagner T, Rushmore J, **Eden UT**, Simon S, Valero-Cabre A. Noninvasive neurostimulation using combined electric and sonic fields. In Preparation.

43. Prerau MJ, Lipton PA, Eichenbaum HB, **Eden UT**, Intermittently Context-Dependent Activity in the Rat Hippocampus and Entorhinal Cortex. *Journal of Neuroscience*, 2012: In Review.

44. Prerau MJ, Lipton PA, Eichenbaum HB, **Eden UT**. Population Encoding of Context-Dependent Activity in the Rat Hippocampus and Entorhinal Cortex. In Preparation

45. Huang Y, Brandon MP, Griffin AL, Hasselmo ME, **Eden UT**. Hypothesis tests for comparing spike trains, with application in detecting trajectory coding in rat hippocampus. In Revision.

46. Meng L, Kramer MA, Middleton SJ, Whittington MA, **Eden UT**. A unified approach to linking experimental, statistical and, computational analysis of spike train data. Submitted, *PLOS Computational Biology*.

47. Aoi M, Lepage KQ, Lim Y, **Eden UT**, Gardner T. Composite ridges based on the continuous chirplet transform. In Preparation.

48. Tang W, Liu H, **Eden UT**, Kramer MA, Hamalainen MS, Stufflebeam SM. Time-varying network patterns revealed by Granger causality associated with power spectral changes in MEG resting state activity. In Preparation.

Proceedings of Meetings:

1. **Eden UT**, Brown EN. Adaptive filtering algorithms for spike train observations. Poster presentation at 10th Annual Computational Neuroscience Meeting. San Francisco and Pacific Grove, CA. June 30 – July 5, 2001.

2. **Eden UT**, Smith A, Frank LN, Barbieri R, Brown EN. Adaptive filtering algorithms for neural encoding and decoding. Program No. 405.15. 2002 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2002. Online.

3. **Eden UT**, Brown EN. Particle Filtering Algorithms for Neural Decoding and Adaptive Estimation of Receptive Field Plasticity. Poster presentation at 11th Annual Computational Neuroscience Meeting. Chicago, IL. July 21-25, 2002.

4. **Eden UT**, Truccolo W, Barbieri R, Donoghue JP, Brown EN. Adaptive Neural Filtering Applied to Hand Movement Coding in Primate Primary Motor Cortex During a Hand Tracking Task. Poster presentation at 12th Annual Computational Neuroscience Meeting. Alicante, Spain. July 5-9, 2003.

5. **Eden UT**, Truccolo W, Ergun A, Fellows MR, Donoghue JP, Brown EN. Exact and approximate point process filters for adaptive neural encoding and decoding. Program No. 429.2. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2003. Online.

6. **Eden UT**, Brown EN. Adaptive Decoding of Hand Movement Trajectories from Simulated Spike Train Observations from a Dynamic Ensemble of Motor Cortical Neurons. Poster & Oral presentation at 13th Annual Computational Neuroscience Meeting & Workshops. Baltimore, MD. July 18-20, 2004.

7. Truccolo W, Fellows MR, **Eden UT**, Brown EN, Donoghue JP. Primary motor (MI) and parietal (5d) coordination during reaching: point process and LFP models. Program No. 421.1. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2004. Online.

8. **Eden UT**, Brown EN. Using dynamic algorithms to decipher neural representations of biological signals. Oral presentation at AMS Special Session on Mathematics and 21st Century Biology, Joint Mathematics Meetings. Atlanta, GA. January 5, 2005.

9. Czanner G, **Eden UT**, Wirth S, Suzuki WA, Brown EN. A dynamic analysis of neuronal spiking activity in the primate hippocampus. Program No. 776.4. 2005 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2005. Online.

10. **Eden UT**, Amirnovin R, Brown EN, Eskandar EN. Analysis of oscillatory spiking in the subthalamic nucleus of Parkinson's patients using point process models. Program No. 491.12. 2006 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2006. Online.

11. Czanner G, **Eden UT**, Wirth S, Yanike M, Suzuki WA, Brown EN. A definition of the signal to noise ratio for spiking neurons. Program No. 491.8. 2006 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2006. Online.

12. Prerau MJ, **Eden UT**. Beyond the Gaussian: a Bayesian framework using empirical distributions for the analysis of differential firing in Hippocampal place cells. Program No. 574.12. 2006 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2006. Online.

13. **Eden UT**. Analysis of oscillatory spiking in the subthalamic nucleus of Parkinson's patients using point process GLM. Proceedings of the 21st annual New England Statistics Symposium, Storrs, CT, April 2007.

14. Prerau MJ, Lipton PA, Robitsek RJ, White JA, Eichenbaum HB, **Eden UT**. Trajectory prediction and analysis of differential firing in the rat hippocampus and surrounding parahippocampal cortical areas. 2007 abstract viewer/ititerary planner. San Diego, CA: Society for Neuroscience, 2007. Online.

15. Dreyer AA, Czanner G, **Eden UT**, Lim HH, Brown EN. Point process statistical framework for improved auditory neural threshold estimates. 2007 abstract viewer/itinerary planner. San Diego, CA: Society for Neuroscience, 2007. Online.

16. Czanner G, Sarma SV, **Eden UT**, Wirth S, Yanike M, Suzuki WA, Brown EN. Statistical inference for signal-to-noise ratio of non-Gaussian systems with application to models of neural encoding. 2007 abstract viewer/itinerary planner. San Diego, CA: Society for Neuroscience, 2007. Online.

17. Czanner G, Dreyer A, **Eden UT**, Wirth S, Yanike M, Lim HH, Suzuki WA, Brown EN. Toward understanding why neurons fire using dynamic signal processing tools and statistical inference. Aplimat 2008.

18. Prerau MJ, Lipton PA, Eichenbaum HB, **Eden UT**. Trial-to-trial variability and differential firing in the rat hippocampus and surrounding parahippocampal cortical areas. 2008 abstract viewer/itinerary planner. Washington DC: Society for Neuroscience, 2008. Online.

19. Huang Y, Brandon MP, Griffin AL, Hasselmo ME, **Eden UT**. Decoding movement trajectories through a T-maze using point process filters applied to place field data from rat Hippocampal region CA1. 2008 abstract viewer/itinerary planner. Washington DC: Society for Neuroscience, 2008. Online.

20. Prerau MP, Lipton PA, Eichenbaum HB, **Eden UT**. Intermittently context dependent differential firing in the rat hippocampus and surrounding parahippocampal cortical areas. Chicago, IL: Society for Neuroscience, 2009, Online.

21. Macdonald C, Lepage KQ, **Eden UT**, Eichenbaum HB. Hippocampal neurons encode the temporal organization of non-spatial event sequences. San Diego, CA: Society for Neuroscience, 2010, Online.

22. Lepage KQ, Kramer MA, Kopell N, Gotts S, Gregoriou G, Desimone R, **Eden UT**. Depenence of spike-field coherence on expected intensity. San Diego, CA: Society for Neuroscience, 2010, Online.

Book Chapters:

1. Brown EN, Barbieri R, **Eden UT**, Frank LM. Likelihood methods for neural spike train data analysis. In: Computational neuroscience: a comprehensive approach. London, CRC Press. 2003; Chapter 9, pp 253-286.

2. **Eden UT**. Point process models for neural spike trains. In: Neural Signal Processing: Quantitative Analysis of Neural Activity. (Mitra P, ed) pp. [43-51]. Washington, DC, Society for Neuroscience. 2008.

3. **Eden UT**, Srinivasan L, Sarma SV. Neural signal processing tutorial II: point process model estimation. In: Neural Signal Processing: Quantitative Analysis of Neural Activity. (Mitra P, ed) pp. [79-87]. Washington, DC, Society for Neuroscience. 2008.

Theses:

1. **Eden UT**. Point process filters in the analysis of neural spiking models. PhD. Thesis in Medical Engineering/Medical Physics. Harvard/MIT Division of Health Sciences and Technology. 2005.

Patents:

1. Wagner T, & **Eden UT**. Apparatus and method for stimulation of biological tissue. Filed, June 2007.

2. Srinivasan L, **Eden UT**, Brown EN & Willsky A. Device and method for providing a combined bioprosthetic specification of goal state and path of states to goal. Application number 20060241788**.** Filed, January 27, 2005.

3. Hickerson K, **Eden UT**. Accelerated handwritten symbol recognition in a pen based tablet computer. Patent number 7,266,236. Granted September 4, 2007.

Invited Talks/Conference presentations

2004:

Invited Speaker, Workshop on Decoding Internal Representations at the 13th Annual Computational Neuroscience Meeting. Baltimore, MD

Oral Presentation, 26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Francisco, CA

2005:

Invited Speaker, AMS Special Session on Mathematics and 21st Century Biology, Joint Mathematics Meetings, Atlanta GA

Invited Speaker, Department of Brain and Cognitive Sciences, MIT.

Invited Speaker, Boston University Statistics Seminar Series, Boston University.

Invited Speaker, Department of Statistics Seminar Series, Carnegie Mellon University.

2006:

Invited Speaker, Statistics for Biological Networks Workshop, Eurandom, Eindhoven University of Technology, Eindhoven, Netherlands

Invited Speaker, Boston University Statistics Seminar Series.
Oral Presentation, Computational and Systems Neuroscience Meeting 2006, Salt Lake City, UT
Invited Speaker, Third Workshop on the Statistical Analysis of Neural Data, Pittsburgh, PA
Invited Speaker, Fourteenth Annual Dynamical Neuroscience Satellite Symposium: Frontiers in Neural Signal Processing, Atlanta, GA
Session Leader, Spike Model Tutorial, Fourteenth Annual Dynamical Neuroscience Satellite Symposium: Frontiers in Neural Signal Processing, Atlanta, GA

2007:

Invited Speaker, New England Statistics Symposium, Storrs, CT.
Invited Speaker, Department of Biomedical Engineering Seminar Series, Technion University, Haifa, Israel
Invited Speaker, Department of Statistics, University of Connecticut.
Invited Speaker, Center for Computational Science, Boston University
Invited Speaker, Department of Statistics, University of Massachusetts, Amherst.
Invited Speaker, Joint Statistical Meetings, Salt Lake City, UT
Invited Speaker, IEEE CDC, New Orleans, LA

2008:

Invited Speaker, Department of Statistics, University of Chicago.
Invited Speaker, School of Engineering and Applied Sciences, Harvard University.
Invited Speaker, Methods in Neuroscience Short Course, Marine Biological Laboratory, Woods Hole, MA
Invited Speaker, Department of Cognitive and Neural Systems, Boston University.
Invited Speaker, Society for Neuroscience Short Course on Quantitative Analysis of Neural Activity.
Session Leader, Tutorial Session, Society for Neuroscience Short Course on Quantitative Analysis of Neural Activity.
Invited Speaker, Workshop on Modeling, Estimation, and Control in Neuroscience, 47th IEEE Conference on Decision and Control, Cancun, Mexico

2009:

Workshop Co-organizer and Speaker, Computational and Systems Neuroscience Workshops, Snowbird UT
Invited Speaker, Department of Statistics, Harvard University.
Invited Speaker, Time Series Analysis in Neuroscience Workshop, Columbia University.
Invited Speaker, New England Statistics Symposium, University of Connecticut, Storrs, CT
Invited Speaker, European Meeting of Statisticians, Universite Paul Sabatier, Toulouse, France
Invited Speaker and Panel Discussant, INCF Congress of Neuroinformatics, Pilsen, Czech Republic
Invited Speaker, Seventeenth Annual Dynamical Neuroscience Satellite Symposium: Dynamical Disease, Chicago, IL

2010:

Invited Speaker, International Biometric Society: Eastern North American Region (ENAR) Spring Meeting, New Orleans, LA
Invited Session Speaker, New England Statistics Symposium, Harvard University.
Invited Speaker, National Institute for Physiological Sciences, International Workshop: Fresh Perspectives of Computation in Neuronal Systems, Okazaki, Japan
Invited Speaker, Department of Physics, Kyoto University, Kyoto, Japan
Invited Speaker, Department of Biostatistics, Harvard University
Invited Speaker, Department of Applied Mathematics, Brown University

2011:

Invited Speaker, Cognitive Rhythms Collaborative, BU/MIT
Invited Speaker, International Conference of the IEEE Engineering in Medicine and Biology Society, Boston, MA

2012:

Invited Speaker, Neural Dynamics and Coding Symposium, University of Texas, San Antonio, TX
Invited Speaker, Provost's Interdisciplinary Research Conference on Parkinson's Disease and Epilepsy, Boston University, Boston, MA
Invited Speaker, Parkinson's Disease Forum, Boston University, Boston, MA
Commencement Speaker, Department of Mathematics and Statistics, Boston University, Boston, MA
Invited Speaker, World Congress in Probability and Statistics, Istanbul, Turkey

2013:

Invited Speaker, Department of Biostatistics, Boston University, Boston, MA
Invited Speaker, Workshop on disease, Mathematical Biosciences Institute, Ohio State University, Columbus, OH
Invited Speaker, Department of Physiology, UCSF, San Francisco, CA
Invited Speaker, Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD
Invited Speaker, Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, Newark, NJ
Co-organizer, Conference on Rhythmic Dynamics and Cognition, Massachusetts Institute of Technology, Boston, MA
Invited Speaker, Conference on Modeling Neural Activity: Statistics, Dynamical Systems, and Networks, Lihue, HI
Invited Speaker, European Meeting of Statisticians, ELTE, Budapest, Hungary
Invited Speaker, NIH Advisory Committee to the Director BRAIN Working Group Meeting, Boston, MA