Asohan Amarasingham

Department of Mathematics
The City College of New York
160 Convent Ave
New York, NY 10031   phone: (212) 650-5112

Research Interests

Statistics (nonparametrics; conditional inference; [multiple] hypothesis testing; nonstationary point processes; network inference). **Systems & Computational Neuroscience** (statistics of neurophysiological signals; the study of neuronal circuits and networks, and their models; neural coding).

Employment

City University of New York (CUNY)	New York, NY
Assistant Professor of Mathematics, City College of New York	Sept 2010-
Assistant Professor of Psychology and Biology, The Graduate Center	Sept 2011-
Rutgers, the State University of New Jersey	Newark, NJ
Center for Molecular and Behavioral Neuroscience	
Postdoctoral Associate (Laboratory of Professor György Buzsáki)	Mar 2007-Aug 2010
NSF Postdoctoral Fellow	Mar 2005-Mar 2007
University of Jaffna, Sri Lanka	Jaffna, Sri Lanka
Department of Mathematics & Statistics	
Lecturer	Dec 2003-Jan 2005
University of Virginia Medical School, Dept of Neurological Surgery	Charlottesville, VA
Research Assistant	1994-1997

Education

Brown University	Providence, RI
Ph.D., Division of Applied Mathematics	May 2004

  Thesis: *The Statistical Analysis of Temporal Structure in the Activity of the Nervous System* (S. Geman, advisor)

Sc.M, Department of Cognitive & Linguistic Sciences	May 1999
The University of Virginia	Charlottesville, VA
B.Sc., Mathematics & Cognitive Science	May 1997

Honors & Awards

US NSF Postdoctoral Fellow in Bioinformatics	2005-2007
Dana Fellowship, Brown University	2003
US DOE Computational Science Graduate Fellow	1998-2002
Echols Scholar, University of Virginia	1993-1997

Grants

Awarded
NIMH R01-MH102840 [Amarasingham (PI), Harrison, Buzsaki]. *Collaborative Research in Computational Neuroscience (CRCNS): Identification and Plasticity of Neuronal Microcircuits,* ($1,207,390), 8/15/2013-8/15/2016   [Role: PI]

Department of Defense Research and Education Program (HBCU/MI). *Nonparametric Inference of Synaptic Properties from Intracellular and Extracellular Neurophyiological Signals.* ($594,000), 9/1/2015-7/31/2018 [Role: PI]

PSC-CUNY Traditional A Research Award, ($3,500) 8/1/2015-7/31/2016 ($3,500) *Calibration of Conditional Inference Procedures in Neurophysiology* [Role: PI]

Pending
NSF Research Traineeship (Neuroscience, Computation, Nano-Engineering) at CCNY (PI: Zhigang Zhu, Co-PI's: Kretschmar, Amarasingham, Tian, Zhang), $3M [Role: Co-PI]

Completed
CCNY City Seeds Grant [Amarasingham (PI), A. Rodriguez-Contreras]: *Inferring synaptic plasticity from the activity of neuronal ensembles in the developing auditory system*, 1/2012-12/2012, ($50,000) [Role: PI]

Manuscripts

Multiscale multiple hypothesis testing for assessing neurophysiological differences across experimental conditions, (with M. T. Harrison), *in preparation*

Estimation of coincidence in nonstationary point processes, (with J. Platkiewicz), to be submitted in June 2015.

Can we recover monosynaptic dynamics from a single extracellular recording? (with J. Platkiewicz), *in preparation.*

Publications

A. Amarasingham, S. Geman, M.T. Harrison, Ambiguity and non-identifiability in the statistical analysis of neural codes, **Proceedings of the National Academy of Sciences,** Vol. 112, 2015, pp. 6455-6460 (suppl., 11 pp).

M.T. Harrison, A. Amarasingham, W. Truccolo, Spatiotemporal conditional inference and hypothesis tests for neural ensemble spiking precision. **Neural Computation**, Vol. 27, 2015, pp. 104-150.

K. Diba, A. Amarasingham, K. Mizuseki, G. Buzsáki, Millisecond-timescale synchrony among hippocampal neurons. **Journal of Neuroscience**, Vol. 34, 2014, 14984-14994.

M. T. Harrison, A. Amarasingham, R.E. Kass, "Statistical identification of synchronous spiking," In *Spike timing: Mechanisms and Function*. Eds: Patricia Di Lorenzo and Jonathan Victor. 2013. Taylor & Francis.

A. Amarasingham, M.T. Harrison, N. Hatsopoulos, S. Geman "Conditional modeling and the jitter method of spike resampling." **Journal of Neurophysiology,** Vol. 107, 2012, pp. 517-531 (suppl., 39 pp.)

S. Fujisawa, A. Amarasingham, M.T. Harrison, G. Buzsáki. "Behavior-dependent short-term assembly dynamics in the medial prefrontal cortex." **Nature Neuroscience**, Vol. 11, 2008, pp. 823-833.

E. Pastalkova, V. Itskov, A. Amarasingham, G. Buzsáki. "Internally-generated cell assemblies in the rat hippocampus." **Science**, Vol. 324, 2008, pp. 1322-1327.

A. Amarasingham, T.-L. Chen, S. Geman, M.T. Harrison, D.L. Sheinberg. "Spike count reliability and the Poisson hypothesis." **Journal of Neuroscience**, Vol. 26, 2006, pp. 801-809 (suppl., 16 pp.).

N. Hatsopoulos, S. Geman, A. Amarasingham, E. Bienenstock, "At what time scale does the nervous system operate?" **Neurocomputing**, Vol. 52-54, 2003, pp. 25-29.

A. Amarasingham, W.B. Levy. "Predicting the synaptic weight distribution in a self-organizing, sequence-prediction network." **Neural Computation**, Vol. 10, 1998, pp. 25-57.

Technical Reports and Editorials

W. Wu, A. Amarasingham, Z. Chen, S-P Kim, "Modeling and analysis of neural spike trains." **Computational Intelligence and Neuroscience***, July 2014.

A. Amarasingham, M.T. Harrison, N. Hatsopoulos, S. Geman, "Conditional Modeling and the Jitter Method of Spike Re-Sampling: Supplement." pp. 39. **arXiV***:1111.4296v1. November 11, 2011.

A. Amarasingham, M. T. Harrison, T.-L. Chen, S. Geman, D. Sheinberg, "Notes on a Spike Count Variability Test." Technical Report, Division of Applied Mathematics, Brown University, 2003.

Selected Invited Talks

University of Wisconsin-Milwaukee, Applied Mathematics Seminar	Oct 2015
New York University Medical School, NYU Neuroscience Institute	May 2014
Bioinformatics and Big Data Seminar, Computer Science, Fordham University	Apr 2014
Insitut de neurolobiologie de la méditerranée (INMED), Marseille	Apr 2014
Variability in Biology Workshop, Champalimaud Centre for the Unknown, Lisbon	Mar 2014
Bodian Seminar in Neuroscience, Johns Hopkins University	Sept 2013
Frontiers in Computational and Applied Mathematics, New Jersey Institute of Tech.	June 2013
8th Annual Federation of European Neuroscience meeting, Barcelona	Jul 2012
The Graduate Center, CUNY, Statistics Seminar	Mar 2011
Columbia University, Center for Theoretical Neuroscience	Feb 2011
Baylor College of Medicine, Duncan Neurological Research Institute	Mar 2010
University of North Texas, Biology	Mar 2010
City College of New York, Mathematics	Feb 2010
Brown University, Applied Mathematics	Feb 2010
International Statistical Institute (57th annual session)	Aug 2009
Invited Paper Session, Neural Coding, Durban, South Africa	
New Jersey Institute of Technology, Mathematical Sciences	Mar 2009
The Statistical Analysis of Neural Data IV, Pittsburgh, PA	May 2008

Teaching Experience

Instructor, Mathematics, The City College of New York
  Math 173 – Introduction to Probability and Statistics (Fall 2010)
  Math 209 – Elements of Calculus and Statistics (Spring 2011, Fall 2012, Spring 2013)
  Math 375 – Elements of Probability (Fall 2012)
  Math 377 – Computational Probability and Statistics (Spring 2011, Spring 2012)
  Math A78 – Advanced Mathematical Statistics (Fall 2013) [graduate]
  Math A77 – Stochastic Processes I (Fall 2014) [graduate]
  Math B76 – Advanced Topics in Statistics (Spring 2012) [graduate]

Lecturer, Mathematics & Statistics, University of Jaffna, Sri Lanka
  Math 401 -- Measure-Theoretic Probability I   Jan 2004—Jun 2004
  Math 402 -- Measure-Theoretic Probability II   Aug 2004—Dec 2005

Teaching Assistant, Applied Mathematics, Brown University
  AM 169 – Computational Probability & Statistics   Fall 2000
  AM 40 – Mathematical Methods in the Brain Sciences   Spring 2001

Supervision

Postbaccalaureate
Jonathan Platkiewicz, Ph.D. (Postdoctoral, 2014-)
Ellis Schaffer (MA 2012, CCNY Mathematics)
Phillip Cloud (MA 2013, Cognitive Neuroscience, CUNY Graduate Center)

Ph.D. Dissertation Committee
Dahlia Nadkarni, 2015, Applied Mathematics, Brown University

Undergraduate and Independent Study
Yash Bhardwaj (Math, Fall 2013)
Majdi Rabia (ENSTA-ParisTech, Math, Summer 2015)

Synergistic Activities

Doctoral Admissions Committee, Graduate Center, Psychology (Cognitive Neuroscience Subprogram), 2011-2012
Search Committee (CCNY Mathematics), 2013-2014
Search Committee (CCNY Cluster Hire/Computational Neuroscience), 2013-2014
Applied Mathematics Committee, Mathematics Department, CCNY, 2010-
Course Supervisor, Math 173 (2010-) and Math 375 (2012-)
Faculty Reviewer, 2012, City Seeds Grants, CCNY

Presentations at international conferences: Society for Neuroscience/SFN (2001,2005,2006, 2012, 2015); Computational Neuroscience/CNS (2002, 2003, 2015); Computational & Systems Neuroscience/COSYNE (2007,2008); Statistical Analysis of Neural Data/SAND (2006,2008); Joint Statistical Meetings/JSM (2007); International Statistical Institute/ISI (2009); FENS (2011)

Ad hoc reviewer for *Nature Neuroscience, Journal of Neuroscience, Journal of Neurophysiology, Hippocampus*, *Journal of Computational Neuroscience, Psychological Review, Neural Circuits & Systems*, *Network: Computation in Neural Systems, Journal of Neural Engineering, PLoS Computational Biology.*

Guest Editor, Special issue on "Modeling and Analysis of Neural Spike Trains", *Computational Intelligence and Neuroscience*

External Member, Ph.D. Dissertation Committee for Dahlia Nadkarni, Division of Applied Mathematics, Brown University (April 2015)

Program Committee, Computational and Systems Neuroscience (CoSyNe) conference, 20132014

Sri Lanka Chair, J. Luce Foundation, 2013-

Lead Member, AAUP Contract Negotation Team, Rutgers University Postdoctoral Associates, Aug 2009-Sep 2010

Project Coordinator, World Bank Institutional Development Proposal, University of Jaffna, Sri Lanka, 2004