

Sumanta Basu

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| CONTACT INFORMATION | Department of Biological Statistics and Computational Biology Cornell University 1192 Comstock Hall Ithaca, NY 14853-2601 USA <i>Phone:</i> (607) 255-9813 <i>Cell:</i> (734) 358-7953 <i>Email:</i> sumbose@cornell.edu <i>Webpage:</i> http://faculty.bscb.cornell.edu/~basu/ |
| CITIZENSHIP | INDIA |
| RESEARCH INTERESTS | high-dimensional statistics, time series, graphical models, ensemble learning, nonlinear methods, genomics and financial econometrics |
| EDUCATION | University of Michigan , Ann Arbor, MI USA Ph.D., Statistics, August 2009 - August 2014 <ul style="list-style-type: none">• Advisor: Professor George Michailidis• Thesis: Modeling and Estimation of High-dimensional Vector Autoregressions Indian Statistical Institute , Kolkata, India M.Stat., August 2006 - April 2008 <ul style="list-style-type: none">• Specialization: Mathematical Statistics & Probability• First Division with Distinction B.Stat., August 2003 - April 2006 <ul style="list-style-type: none">• With Honors in Statistics• First Division with Distinction |
| ACADEMIC APPOINTMENTS | Assistant Professor Summer 2016 - Present Shayegani Bruno Family Faculty Fellow, Department of Biological Statistics and Computational Biology, Cornell University Postdoctoral Scholar Winter 2016 - Spring 2016 Brown Lab, Environmental Genomics and Systems Biology, The Biosciences Area, Lawrence Berkeley National Laboratory Advisor: Dr. James B. Brown Postdoctoral Scholar Fall 2014 - Fall 2015 Department of Statistics, University of California, Berkeley Advisor: Professor Bin Yu and Professor Peter Bickel PhD Candidate Winter 2011 - Spring/Summer 2014 Department of Statistics, University of Michigan Includes completed PhD dissertation and coursework (GPA: 3.95/4.0) Instructor Summer 2012, Summer 2013 Masters in Financial Engineering (MFE) Program, Ross School of Business, University of Michigan Graduate Student Teaching Assistant Fall 2009 - Winter 2012 |

Department of Statistics, University of Michigan

Graduate Student Research Assistant Summer 2010, Winter 2011, Summer 2011,
Winter 2012 - Spring/Summer 2014

Department of Statistics, University of Michigan
under direction of Professor George Michailidis

Topics:

- Estimation and Inference on Graphical Models with time series
- Integromics with Applications to Prostate Cancer Progression

PUBLICATIONS

Jiahe Lin *, **Sumanta Basu** *, Moulinath Banerjee and George Michailidis (2016), Penalized Maximum Likelihood Estimation on Multi-layered Gaussian Graphical Models, *Journal of Machine Learning Research*, forthcoming.

preprint available at <http://arxiv.org/pdf/1601.00736v1.pdf>.

Sumanta Basu and George Michailidis (2015), Regularized Estimation in Sparse High-dimensional Time Series Models, *Annals of Statistics Volume 43, Number 4 (2015)*, 1535-1567. [Winner of a Student Paper Award, IISA Conference 2014].

Sumanta Basu, Ali Shojaie and George Michailidis (2015), Network Granger Causality with Inherent Grouping Structure, *Journal of Machine Learning Research (JMLR)*, 16(Mar):417453, 2015.

Akash Kaushik, Shaiju Vareed, **Sumanta Basu**, Vasanta Putluri, Nagireddy Putluri, Katrin Panzitt, Christine Brennan, Arul Chinnaiyan, Ismael Vergara, Nicholas Erho, Nancy Weigel, Nicholas Mitsiades, Ali Shojaie, Ganesh Palapattu, George Michailidis and Arun Sreekumar (2013), Metabolomic profiling identifies biochemical pathways associated with castrate resistant prostate cancer, *Journal of Proteome Research*, 13, no. 2: 1088-1100.

Ali Shojaie, **Sumanta Basu** and George Michailidis (2012), Adaptive Thresholding for Reconstructing Regulatory Networks from Time Course Gene Expression Data, *Statistics In Biosciences, May 2012, Volume 4, Issue 1, pp 66-83*.

Sumanta Basu, Ali Shojaie and George Michailidis (2011), Estimating Regulatory Networks from Time Course Gene Expression Data via Adaptive Penalization, *Proceedings of 26th NIPS Workshop on Machine Learning in Computational Biology*.

SUBMITTED AND
WORKING PAPERS

¹ **Sumanta Basu** *, William Duren * , Charles R. Evans, Charles F. Burant, George Michailidis and Alla Karnovsky, Sparse network modeling and Metscape-based visualization methods for the analysis of large-scale metabolomics data, revision invited. Software available at <http://metscape.ncibi.org/index.html>.

Sumanta Basu, Sreyoshi Das, George Michailidis and Amiyatosh Purnanandam, A System-wide Approach to Measure Connectivity in the Financial Sector, FDIC-JFSR 16th Annual Bank Research Conference.

preprint available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2816137.

Sumanta Basu, James B. Brown and Bin Yu, iterative Random Forests: stable identification of high-order interactions in heterogeneous and high-dimensional data, in preparation. Software available at <https://github.com/sumbose/iRF>

Sumanta Basu and George Michailidis, Low-Rank and Sparse Modeling of High-dimensional Vector Autoregressions, in preparation. preprint available at <http://faculty.bscb.cornell.edu/~basu/drafts/BM.L+S.pdf>.

Sumanta Basu and George Michailidis, Network Modeling of High-dimensional Time Series in the Presence of Observable Factors, in preparation.

¹Some early drafts available at <http://faculty.bscb.cornell.edu/~basu/>
* equal contribution

PRESENTATIONS

Network Modeling of High-dimensional Time Series with Applications to Systemwide Risk Monitoring

- Invited Talk: DSMM 2016, San Francisco, California
- Invited talk: IISA 2016, Corvallis, Oregon
- Invited Talk: ORIE Colloquium (Oct 2016), Cornell University

iterative Random Forests (iRF): stable identification of high-order interactions in heterogeneous and high dimensional data

- Invited Talk: Information Theory and Applications (ITA) 2016, San Diego, California
- Invited Talk: Joint Statistical Meetings (JSM) 2016, Chicago, Illinois
- Contributed Talk: IMS New Researchers Conference 2016, Madison, Wisconsin

Network Modeling of High-dimensional Time Series in the Presence of Factors

- Contributed Talk: 2015 Joint Statistical Meetings, Seattle, Washington

Doing Data Science: Straight from the Frontline

- Invited Discussion: ENAR 2015

Regularized Estimation in Sparse High-dimensional Time Series Models

- Contributed Talk: 2014 Joint Statistical Meetings, Boston, Massachusetts
- Contributed Talk: 2014 IISA Conference, Riverside, California
- Contributed Poster: ISBIS 2014 and SLDM Meeting, Durham, North Carolina
- Contributed Poster: The Eighth Michigan Student Symposium for Interdisciplinary Statistical Sciences 2014, University of Michigan

High-Dimensional Vector Autoregression (VAR)

- Topic Contributed Talk: 2013 Joint Statistical Meetings, Montréal, Québec, Canada
- Contributed Poster: Duke Workshop on Sensing and Analysis of High-Dimensional Data, Duke University, 2013
- Contributed Poster: Opening Workshop, 2013-14 Program on Low-dimensional Structure in High-dimensional Systems (LDHD), SAMSI, 2013.

Network Granger Causality with Inherent Grouping Structure

- Invited Talk: 2011 Spring Research Conference on Statistics in Industry and Technology, Department of Industrial Engineering at Northwestern University
- Contributed Poster: Midwest Statistics Research Colloquium 2011, Department of Statistics, University of Wisconsin-Madison
- Invited Talk: Midwest Statistics Research Colloquium 2013, Department of Statistics, University of Wisconsin-Madison
- Contributed Talk: The Seventh Michigan Student Symposium for Interdisciplinary Statistical Sciences 2013, University of Michigan

Estimating Regulatory Networks from Time Course Gene Expression Data via Adaptive Thresholding

- Contributed Talk: 2012 Joint Statistical Meetings, San Diego

PROFESSIONAL EXPERIENCE

Wipro Technologies, Kolkata, India

Business Analyst, Business Analytics Center of Excellence July 2008 - July 2009

- Design and statistical analysis of store level experiments for a U.S. based retail chain, helping business owners to understand the impact of various promotional activities, media activities, manpower planning before the chain wide implementation of a new strategy.

AWARDS

Department of Statistics, University of Michigan

- Rackham Travel Grant, Winter 2011 - 2013
- Outstanding First Year PhD Student, 2009 - 2010
- Departmental Fellowship, Winter 2010
- Departmental Fellowship, Fall 2009

Wipro Technologies, Kolkata

- Award of Excellence and Innovation, 2009

Indian Statistical Institute, Kolkata

- University Scholarship, 2003 - 2008
- Prizes for academic excellence in several semesters, 2003 - 2008

TEACHING

EXPERIENCE

Department of Statistics, University of Michigan

Teaching Assistant (Fall 2009 - Winter 2012)

- Stat 621: Theory of Probability II
- Stat 620: Applied Probability and Stochastic Modeling
- Stat 608: Methods in Optimization Statistics
- Stat 607: Programming and Numerical Methods in Statistics
- Stat 425: Introduction to Probability
- Stat 250: Introduction to Statistics and Data Analysis

Ross School of Business, University of Michigan

Instructor for Masters in Financial Engineering (MFE) Program (Summer 2012, 2013)

- Review of Probability
- Introduction to Programming with SAS
- Introduction to Programming with STATA
- Introduction to Programming with MATLAB

SERVICES AND AFFILIATIONS

Manuscript Review

Annals of Statistics

Journal of Machine Learning Research

Biometrika

Electronic Journal of Statistics

Statistica Sinica

Journal of Computational and Graphical Statistics

Computational Statistics and Data Analysis

Journal of Statistical Software

Journal of Econometrics

Linear Algebra and Its Applications

Member of American Statistical Association

Member of Institute of Mathematical Statistics

Member of International Indian Statistical Association

Member of INFORMS

UNDERGRADUATE RESEARCH

Part of the designing team of a Visual Cryptographic Scheme and a Digital Signature System (purchased by Indian Navy) under the supervision of Professor Bimal Roy and Professor Subhamoy Maitro at **Indian Statistical Institute**, Kolkata, India