

# SUBHADEEP (DEEP) MUKHOPADHYAY

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## EDUCATION

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**Texas A&M University** Aug 2008 – May 2013

*Ph.D.*, Department of Statistics

Advisors: Prof. Emanuel Parzen and Prof. S.N.Lahiri.

Dissertation Topic: Nonparametric Inference for High Dimensional Data.

**Indian Institute of Technology (IIT), Kanpur** Aug 2006 – June 2008

*Master's of Statistics*, Department of Mathematics & Statistics

Graduating GPA 9.9/10.0, University Rank : 1. Awarded **Gold Medal**.

Specialization: Statistics and Machine Learning.

**University of Calcutta** Aug 2003 – June 2006

*Bachelor of Statistics*, Department of Statistics

University Rank : 9. Awarded **National Scholarship** from the University of Calcutta.

Major: Statistics; Minor: Mathematics and Computer Science.

## MAJOR RESEARCH INTERESTS

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Nonparametric Data Science; United Statistical Algorithms.

## PROFESSIONAL POSITIONS

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Assistant Professor, Dept of Statistical Science, Fox School of Business, Temple University Aug 2013 – present

- Affiliate Faculty, Center for High-Dimensional Statistics
- Affiliate Faculty, The Data Science Institute

## SELECTED HONORS & AWARDS

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- Best Paper Award, JSM ASA Section on Nonparametric Statistics 2016
- Best Paper Award, JSM ASA Section on Statistical Computing 2016
- Winner of IEEE International Biometric Eye Movements Verification Competition 2014
- Emanuel Parzen Graduate Research Fellowship Award, Texas A&M University 2012
- Best Poster and Presentation, by Google at SIAM International Conference on Data Mining 2011
- Best Student Paper, IISA Conference on Probability, Statistics & Data Analysis, NCSU 2011
- Best Paper Award, JSM ASA Section on Nonparametric Statistics 2010
- Sangeeta Pradhan Memorial Gold Medal: Outstanding all-round achievement among *all disciplines* of the Master of Science Programs in IIT Kanpur 2008
- N. Balakrishnan Award of Statistics and Director Medal, IIT Kanpur 2008
- Prof. J N Kapur Prize for Mathematical Excellence in undergraduate study in IIT Kanpur 2008

## TEACHING

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**Undergraduate Courses** Temple University

- STAT 2501, Quantitative Foundations for Data Science (*newly* developed course) Spring 2017
- STAT 2103, Statistical Business Analytics Spring 2014, 2015, 2017

- STAT 9190, Nonparametric Data Science (*newly* developed special topics course) Spring 2016
- STAT 8115: Nonparametric Methods (*newly* redesigned course) Fall 2016
- STAT 8002, Probability & Stat Theory II Spring 2014, 2015
- STAT 8001, Probability & Stat Theory I Fall 2013, 2014

## PUBLICATIONS

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### Refereed Journal Publications [\* indicates Temple student author]

1. Bruce, S.\*, Li, Z\*., Yang, H\*., and **Mukhopadhyay, S.** (2018). Nonparametric Distributed Learning Framework: Algorithm and Application to Variable Selection. *IEEE Transactions on Big Data* (forthcoming), URL <http://ieeexplore.ieee.org/document/8303780/>.
2. **Mukhopadhyay, S.** and Nandi, S\* (2018) LPiTrack: Eye Movement Pattern Recognition Algorithm and Application to Biometric Identification. *Machine Learning Journal*, **107**, 313-331.
3. **Mukhopadhyay, S.** (2017) Statistics Educational Challenge in the 21st Century. *Biostatistics and Biometrics*, doi: 10.19080/BBOAJ.2017.02.555585.
4. **Mukhopadhyay, S.** (2017) Large-Scale Mode Identification and Data-Driven Sciences. *Electronic Journal of Statistics*, **11** 215–240.
5. **Mukhopadhyay, S.**(2016) Large-Scale Signal Detection: A Unifying View. *Biometrics*, **72** 325–334.
6. **Mukhopadhyay, S.** (2016) Invited Review of “Analysis of Multivariate and High-Dimensional Data,” *Journal of the American Statistical Association*, **10** 1321.
7. Parzen, E. and **Mukhopadhyay, S.** (2013) United Statistical Algorithms, LP comoment, Copula Density, Nonparametric Modeling. *59th ISI World Statistics Congress (WSC), Hong Kong*.
8. Parzen, E. and **Mukhopadhyay, S.** (2012) Invited discussion of “Probabilistic Index Models” by Olivier Thas et al, *Journal of Royal Statistical Society, Series B*, **74**.
9. Lahiri, S. N. and **Mukhopadhyay, S.** (2012) On the Mahalanobis-distance based Penalized Empirical Likelihood Method in High Dimensions. *Statistics and Its Interface*, **5**, 331–338.
10. Lahiri, S. N., and **Mukhopadhyay, S.** (2012). A Penalized Empirical Likelihood Method in High Dimensions. *Annals of Statistics*, **40** 2511–2540.
11. Lahiri, S.N. and **Mukhopadhyay, S.** (2011) Invited discussion of “Subsampling weakly dependent time series and application to extremes” by Doukhan, P., Prohl, S. and Robert, C. *TEST*, **20** 491-496.
12. **Mukhopadhyay, S.**, Parzen, E. and Lahiri, S.N. (2011) From Data to Constraints. *Bayesian Inference And Maximum Entropy Methods In Science And Engineering: 31st International Workshop, Waterloo*.
13. **Mukhopadhyay, S.** and Ghosh, A.K. (2011) Ensemble Methods for Supervised and Semi-supervised Classification Using Kernel Density Estimates. *Computational Statistics & Data Analysis*, **55** 2344-2353.

### Under Review [\* indicates Temple student author]

1. **Mukhopadhyay, S.**, Fletcher, D.\* (2018) Bayesian Modeling *via* Goodness-of-fit. *arXiv:1802.00474*.
2. **Mukhopadhyay, S.**, Wang, K.\* (2018) A Nonparametric Approach to High-dimensional K-sample Problem.
3. **Mukhopadhyay, S.**, (2018) Decentralized Nonparametric Multiple Testing.
4. **Mukhopadhyay, S.**, (2018) United Statistical Algorithms and Data Science.
5. **Mukhopadhyay, S.** (2017+) Unified Statistical Theory of Spectral Graph Analysis. *arXiv:1602.03861*.
6. **Mukhopadhyay, S.** and Parzen, E. (2016+) Nonlinear Time Series Modeling by LPTime, Nonparametric Empirical Learning. *arXiv:1308.0642*.

## SOFTWARE

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1. **Mukhopadhyay, S.**, Fletcher, D.\* (2018). BayesGOF: Bayesian Modeling via Goodness of Fit. URL: <https://cran.r-project.org/web/packages/BayesGOF/index.html>
2. **Mukhopadhyay, S.**, Wang, K\* (2017) LPKsample: LP Nonparametric High Dimension K-Sample Comparison, URL: <https://cran.r-project.org/web/packages/LPKsample/index.html>
3. **Mukhopadhyay, S.**, Nandi, S. (2015). LPTime: LP Nonparametric Approach to Non-Gaussian Non-Linear Time Series Modelling. URL: <http://cran.r-project.org/web/packages/LPTime/>

## MENTORING AND ADVISING

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- Currently Advising: Doug Fletcher and Kaijun Wang.
- Mentored Ph.D. Students: Chen Chen, Scott Bruce, Zeda Li, Shinjini Nandi.
- Mentored Master's student: Tanmay Khole, Yu Tian, Fengzheng Zhu, Alex Hsiang-Chieh Yang.
- Mentored Undergraduate Students: Brendan Garrett, Maksym Tsisyk, Rahul Nimmagadda, Jonathan Huynh.

## PROFESSIONAL SERVICE

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### Professional Memberships

American Statistical Association (ASA)	2012 – Present
Institute of Mathematical Statistics (IMS)	2013 – Present
International Indian Statistical Association (IISA)	2012 – Present
Institute of Electrical and Electronics Engineers (IEEE)	2017 – Present

### University Service

• Committee Member, The Big Data Institute.	2014 – Present
• Evaluations committee of the Annual PhD Program School-Wide Research Competition	2014– 2015
• Presentation at Young Scholars Interdisciplinary Forum	2015
• Judge, 4th Annual Doctoral Programs School-Wide Research Competition	2014
• Judge, 16th Young Scholars Interdisciplinary Forum	2018
• Attendee, The 8th Semi-Annual Fox School Young Scholars Interdisciplinary Forum	2014
• Attendee, Award Ceremony, Dean's Faculty Reception	2013

### Departmental Service

• Graduate Affairs Committee	2013 – Present
• New M.S. in Statistics Program Committee	2013 – Present
• Ph.D. Statistics Qualifying Exam Committee	2013 – Present
• Ph.D. Student Admission Committee	2014 – 2016
• Curriculum design Committee, Undergraduate Program in Statistical Science and Data Analytics	2016

### Referee Service

Journal of the American Statistical Association (Theory and Methods); Biometrics; Electronic Journal of Statistics; PLOS Computational Biology; The American Statistician; Journal of Statistical Planning and Inference; Statistics and Probability Letters; Statistica Sinica; Postdoctoral Grant Application to Research Foundation Flanders (Fonds Wetenschappelijk Onderzoek Vlaanderen FWO); NSA Mathematical Sciences Grant Program.

### Book Review

*Analysis of Multivariate and High-Dimensional Data* by Inge Koch, Cambridge University Press.

## OTHER PROFESSIONAL EXPERIENCE

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### Siemens Medical Solutions

*Machine Learning Group*

May – August, 2010

*Malvern, PA, USA*

*Project:* Learning loop for cloud based computer-aided diagnosis.

*Tools:* Developing novel nonparametric classification algorithms with built-in variable selection facility, learning from soft uncertain labels and tie it with active sequential learning loop, bootstrap sensitivity and uncertainty assessment of CADe system.

*Patent:* Active Learning for Model Selection, *Invention Disclosure* 2010.

## INVITED PRESENTATIONS

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- Stanford University, Department of Statistics. 05-2018
- Fifth Bayesian, Fiducial, and Frequentist (BFF5) Conference, Ann Arbor, MI. 05-2018
- Rutgers University, Department of Statistics 04-2018
- University Of Pennsylvania, Department of Biostatistics, Epidemiology and Informatics 11-2017
- Full day short course at 61st annual Fall Technical Conference (FTC), Philadelphia. 10-2017
- University of Maryland, Department of Mathematics & Statistics. 09-2017
- Parzen Memorial Lecture, Joint Statistical Meetings Baltimore, Maryland 08-2017
- 17th ASMDA, De Morgan House of the London Mathematical Society, UK. 06-2017
- Parzen Memorial Lecture, Corvallis, Oregon. 08-2016
- JSM Nonparametric Statistics Section, Chicago, Illinois. 08-2016
- International Society for NonParametric Statistics (ISNPS) Conference, Avignon, France. 06-2016
- Graph Signal Processing Workshop, University of Pennsylvania. 05-2016
- Princeton University, John W. Tukey 100th Birthday Celebration. 09-2015
- Indian Statistical Institute (Statistics and Mathematics Unit ), Calcutta, India 08-2014
- ISNPS (International Society of NonParametric Statistics) Conference, Cadiz, Spain 06-2014
- Conference on Nonparametric Dependence Modeling, Columbia University, NYC 05-2014
- Big Data Prediction and Analytics section, Conference on Statistical Practice, Tampa, FL 02-2014
- Penn State University, Department of Statistics 01-2013
- Merck Research Laboratories, Rahway, NJ 06-2012
- University of Texas M. D. Anderson, Department of Bioinformatics, Computational Biology & Systems Biology (jointly), Houston, TX 05-2012
- Harvard School of Public Health, Boston, MA 05-2012
- Michigan State University, Department of Statistics 04-2012
- Bell Laboratories, Statistics and Learning Research Department, Alcatel-Lucent 01-2012
- Rutgers University, Department of Statistics 01-2012
- IISA Conference on Probability, Statistics, and Data Analysis, Raleigh, NC 04-2011