

Abhyuday Mandal

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EMPLOYMENT	Associate Professor Department of Statistics University of Georgia, Athens	August 2011 – present
	Assistant Professor Department of Statistics University of Georgia, Athens	August 2005 – August 2011
EDUCATION	Ph.D. in Statistics Georgia Institute of Technology, Atlanta	September 2003 – August 2005
	Master of Arts in Statistics University of Michigan, Ann Arbor, MI	September 2001 – August 2003
	M.Stat in Mathematical Statistics and Probability Indian Statistical Institute, Calcutta, India	August 1999 – July 2001
	Bachelor of Statistics Indian Statistical Institute, Calcutta, India	August 1996 – July 1999

PUBLICATIONS

PUBLISHED

1. Yang, J.; Mandal, A. & Majumdar, D. (2012), “Optimal Designs for Two-level Factorial Experiments with Binary Response”, *Statistica Sinica*, to appear.
2. Kao, M. H.; Mandal, A & Stufken, J. (2012), “Constrained Multiobjective Designs for Functional Magnetic Resonance Imaging Experiments via a Modified Non-Dominated Sorting Genetic Algorithm”, *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 61, 1-20.
3. Datta, G.; Hall, P. & Mandal, A. (2011), “Model Selection by Testing for the Presence of Small-area Effects in Area-level Data”, *Journal of the American Statistical Association - Theory and Methods*, 106, 362-374.
4. Mandal, A.; Ranjan, P; & Wu, C. F. J. (2009), “G-SELC: Optimization by Sequential Elimination of Level Combinations using Genetic Algorithms and Gaussian Processes”, *Annals of Applied Statistics*, 3, 398-421.
5. Kao, M. H.; Mandal, A. & Stufken, J. (2009), “Efficient Designs for Event-Related Functional Magnetic Resonance Imaging with Multiple Scanning Sessions”, *Communications in Statistics – Theory and Methods: Celebrating 50 Years in Statistics Honoring Professor Shelley Zacks*, 38, 3170-3182.
6. Kao, M. H.; Mandal, A.; Lazar, N.; & Stufken, J. (2009), “Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies”, *NeuroImage*, 44, 849-856.
7. Kao, M. H.; Mandal, A. & Stufken, J. (2008), “Optimal Design for Event-related Functional Magnetic Resonance Imaging Considering Both Individual Stimulus Effects and Pairwise Contrasts”, *Special Volume of Statistics and Applications in Honour of Professor Aloke Dey*, 6, 225-241.

8. Dasgupta, T. & Mandal, A. (2008), "Estimation of process parameters to determine the optimum diagnosis interval for control of defective items", *Technometrics*, 50, 167-181.
9. Johnson, K.; Mandal, A. & Ding, T. (2008) "Software for Implementing the Sequential Elimination of Level Combinations Algorithm", *Journal of Statistical Software*, 25, 1-13.
10. Mandal, A.; Johnson, K.; Wu, C. F. J. & Bornemeier, D. (2007), "Identifying Promising Compounds in Drug Discovery: Genetic Algorithms and Some New Statistical Techniques", *Journal of Chemical Information and Modeling*, 47, 981-988.
11. Mandal, A.; Wu, C. F. J. & Johnson, K. (2006), "SELC: Sequential Elimination of Level Combinations by means of modified Genetic Algorithms", *Technometrics*, 48, 273-283.
12. Mandal, A. & Mukerjee, R. (2005), "Design Efficiency under Model Uncertainty for Nonregular Fractions of General Factorials", *Statistica Sinica*, 15, 697-707.
13. Mandal, A. (2005), "An Approach for Studying Aliasing Relations of Mixed Fractional Factorials Based on Product Arrays", *Stat. & Prob. Letters*, 75, 203-210.
14. Banik, P.; Mandal, A. & Rahaman, S. (2002), "Markov Chain Analysis of Weekly Rainfall Data in Determining Drought-proneness", *Discrete Dynamics in Nature and Society*, 7, 231-239.
15. Mandal, A. & Sengupta, D. (2000), "Fatal accidents in Indian Coal Mines", *Calcutta Statistical Association Bulletin*, 50, 95-120.

BOOK REVIEW

16. Mandal, A. (2008), Matrix Algebra: Theory, Computations, and Applications in Statistics by James E. Gentle, *Journal of the American Statistical Association*, 103, 1716-1717.

UNDER REVISION

17. Bargo, A. M.; Mandal, A.; Seymour, L.; McDowell, J. & Lazar, N. A., "Social Network Models for Identifying Active Brain Regions from fMRI Data", under revision for *Annals of Applied Statistics*.

SUBMITTED

18. Kao, M. H.; Majumdar, D.; Mandal, A. & Stufken, J., "Robust Event-Related fMRI designs under a nonlinear model", *Submitted to Annals of Applied Statistics*.
19. Yang, J.; Mandal, A. & Majumdar, D. (2012), "Optimal Designs for 2^k factorial experiments with binary response", *Submitted*.

UNDER PREPARATION

20. Chakraborty, A.; Mandal, A. & Johnson, K. (2012), "In Search of Desirable Compounds", to be submitted to *Biometrics*.
21. Datta, G.; Mandal, A. & Wanjoya, A. (2012), "Small Area Estimation with Uncertain Small-area Effects", to be submitted to *Journal of Statistical Planning and Inference*.

GRANTS

- “SELC: An Optimization Technique Motivated by Modified Genetic Algorithms” – faculty research grant provided by the University of Georgia Research Foundation. (Jan 03, 2006 – Dec 31, 2006, \$8000)
- “G-SELC: A New Global Optimization Technique Using Genetic Algorithms, Tabu Search and Gaussian Processes” – National Science Foundation DMS-0905731. (July 1, 2009 – June 30, 2012, \$100,000).
- “Optimal Design of Experiments for Binary Response” – summer research grant provided by the University of Georgia Provosts Office. (July 01, 2012 – July 31, 2012, \$5000)

GRADUATE STUDENTS

- M.S. Students: Tan Ding (2006).
- Ph.D. Students: Ming-Hung (Jason) Kao (2009), Ana Moura Bargo (current), Wei Zhang (current), Adrijo Chakraborty (current).
- Served in addition as committee member for 4 M.S. students and 4 Ph.D. students.

AWARDS AND HONORS

- Sarah H. Moss Fellowship (2011), University of Georgia.
- IMS Laha Travel Award (2005), Joint Statistical Meetings/IMS Annual Meeting.
- Mary G. Natrella Scholarship (2005), Quality and Productivity Research Conference, Minneapolis, MN.
- SRC Student Scholarship (2005), Spring Research Conference, at Park City, Utah.
- The QSR Best Student Paper Award (2004), INFORMS National Meeting in Denver.
- Invited to attend the 2004 Future Academician Colloquium in Denver, CO, preceding the INFORMS National Meeting.
- Team Champion in the ASA Stat Bowl at the 2004 Joint Statistical Meetings (JSM) in Toronto.
- Best Student Research Paper Award in Theoretical Statistics (2004), Fifth Biennial International Conference on Statistics, Probability and Related Areas, (Athens, Georgia).
- John Morris Fellowship, Georgia Institute of Technology (2003).
- Outstanding first year PhD Student Award, Department of Statistics, University of Michigan (2002). Only two students got the award for that year.
- Scholarship and Certificate of Merit in National Talent Search Examination, 1994 conducted by National Council of Educational Research and Training (NCERT), India.
- 3rd in West Bengal(1993) and 2nd in West Bengal(1994) in Science Talent Search Exam conducted by National Science Society affiliated to Indian Science Congress.
- Rank 13 (out of 450,000 students) in West Bengal in Secondary Examination (1994) and Rank 23 (out of 350,000 students) in West Bengal in Higher Secondary Examination (1996).

TEACHING EXPERIENCE

Taught the following courses at the University of Georgia since 2005:

- Stat 6320 - Statistical Analysis II, Fall 2005
- Stat 6210 - Statistical Methods I, Spring 2006
- Stat 6320 - Statistical Analysis II, Fall 2006
- Stat 6210 - Statistical Methods I, Spring 2007
- Stat 6420 - Applied Linear Models, Fall 2007
- Stat 6800 - Tools for Statistical Theory, Fall 2007
- Stat 6210 - Statistical Methods I, Spring 2008
- Stat 6800 - Tools for Statistical Theory, Fall 2008

Stat 6420 - Applied Linear Models, Fall 2008
Stat 6420 - Applied Linear Models, Fall 2009
Stat 6800 - Tools for Statistical Theory, Fall 2009
Stat 4220 - Applied Experimental Designs, Spring 2010
Stat 6420 - Applied Linear Models, Fall 2010
Stat 4220 - Applied Experimental Designs, Fall 2010
Stat 6430 - Design and Analysis of Experiments, Spring 2011
Stat 4220 - Applied Experimental Designs, Fall 2011

Taught the following course at the Georgia Institute of Technology in 2004:

ISyE 6413 - Design and Analysis of Experiments, Fall 2004

Taught the following course at the University of Michigan since 2001:

Stat 350 - Introductory Statistics, Graduate Student Instructor, Fall 2001

Stat 350 - Introductory Statistics, Graduate Student Instructor, Winter 2002

PRESENTATIONS

INVITED

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Contemporary Issues and Applications of Statistics, Indian Statistical Institute, Kolkata, India, January 2012.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Department of Mathematics and Statistics, University of Maryland, Baltimore County, September 2011.

Optimal Designs for Two Level Factorial Experiments With Binary Response, Statistical Society of Canada Annual Meeting, Wolfville, Canada, June, 2011.

Constrained Multi-objective Designs for Functional MRI Experiments via A Modified NSGA-II, International Conference on Design of Experiments, Memphis, TN, May 2011.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Design and Analysis of Experiments in Modern-day Science and Technology, The Radcliffe Institute for Advanced Study at Harvard University, Cambridge, MA, March 2011.

Optimal Designs for Two Level Factorial Experiments With Binary Response, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago, February, 2011.

Multi-objective Optimal Designs and Social Network Models for Identifying Active Brain Regions in Event-Related fMRI Studies, Applied Statistics Unit, Indian Statistical Institute, Calcutta, India, December 2010.

Estimation of Process Parameters to Determine the Optimum Diagnosis Interval for Control of Defective Items, Department of Mathematics and System Analysis, Aalto University, Finland, November 2010.

Optimal Designs for Two Level Factorial Experiments With Binary Response, INFORMS Annual Meeting, Austin, November 2010.

Multi-objective Optimal Designs and Social Network Models for Identifying Active Brain Regions in Event-Related fMRI Studies, Division of Biostatistics and Epidemiology. Medical University of South Carolina, Charleston, SC, September, 2010.

Social Network Models for Identifying Active Brain Regions from fMRI Data, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago, April, 2010.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Advances in Statistical Science - International Conference in Celebration of 90th Birth Anniversary of Professor C.R. Rao, Calcutta, January 2010.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Seventh Triennial International Symposium on Probability and Statistics organized by Calcutta Statistical Association jointly with the Department of Statistics, University of Calcutta, December 2009.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, INFORMS Annual Meeting, San Diego, October 2009.

G-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes, Joint Statistical Meeting, Washington DC, August, 2009.

G-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes, Spring Research Conference On Statistics in Industry and Technology, Vancouver, Canada, June 2009.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Department of Statistics and Biostatistics, Rutgers University, March, 2009.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago, February, 2009.

G-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes, Department of Biomedical Engineering and Computational Sciences, Helsinki University of Technology, November 2008.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Department of Mathematics and Statistics, University of Helsinki, November, 2008.

G-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes, School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA, October 2008.

G-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes,, International Conference on Interdisciplinary Mathematical and Statistical Techniques, University of Memphis, May, 2008.

Estimation of process parameters to determine the optimum diagnosis interval for control of defective items, Indian Statistical Institute, Kolkata, December, 2007.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, University of Clemson, November 2007.

Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, International Conference on Advances in Interdisciplinary Statistics and Combinatorics, Greensboro, Octoberber 2007.

Design Efficiency under Model Uncertainty for Nonregular Fractions of General Factorials, Sixth Triennial International Symposium on Probability and Statistics organized by Calcutta Statistical Association jointly with the Department of Statistics, University of Calcutta, December 2006.

Estimation of Process Parameters to Determine the Optimum Diagnosis Interval for Control of Defective Items, NISS Affiliates & NISS/SAMSI University Affiliates 2006 Annual Meeting

SELC: Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, University of Clemson, December 2005.

SELC: Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, Spring Research Conference, Park City, Utah, June 2005.

SELC: Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, Fifth Biennial International Conference on Statistics, Probability and Related Areas organized by IISA, May 2004.

CONTRIBUTED

- G*-SELC: Optimization by Sequential Elimination of Level Combinations Using Genetic Algorithm and Gaussian Processes, Spring Research Conference, Georgia Institute of Technology, Atlanta, GA, May 2008.
- Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, International Conference on Statistical Paradigms: Recent Advances and Reconciliations, Indian Statistical Institute, Kolkata, January, 2008.
- Multi-objective Optimal Experimental Designs for Event-Related fMRI Studies, Design and Analysis of Experiments (DAE), University of Memphis, Octoberber 2007.
- Estimation of process parameters to determine the optimum diagnosis interval for control of defective items, Joint Research Conference, June, 2006.
- Estimation of process parameters to determine the optimum diagnosis interval for control of defective items, Joint Statistical Meeting, August, 2006.
- Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, 28Th Annual Midwest Biopharmaceutical Statistics Workshop, Muncie, IN, May 2005.
- Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, 2005 Quality and Productivity Research Conference , Minneapolis, MN, May 2005.
- Design Efficiency under Model Uncertainty for Nonregular Fractions of General Factorials, Joint Statistical Meeting, August, 2005.
- SELC : Sequential Elimination of Level Combinations by Means of Modified Genetic Algorithms, INFORMS Denver, October 2004.
- SELC: Sequential Elimination of Level Combinations by means of modified Genetic Algorithms, Joint Statistical Meeting, August, 2004.
- Design Efficiency under Model Uncertainty for Nonregular Fractions of General Factorials, Fifth Biennial International Conference on Statistics, Probability and Related Areas organized by IISA, May 2004.
- Multivariate Liquid Association with Application to Drug Optimization, INFORMS Atlanta, October, 2003.
- Sequential Elimination of Levels in Design of Experiments Using Genetic Algorithms, INFORMS Atlanta, October, 2003.
- Bayesian Designs for Factor Screening and Response Surface Exploration, Joint Statistical Meeting, August, 2003.
- Optimal Designs for Model Selection, Pfizer Global Research and Development, December, 2002.

PROFESSIONAL ACTIVITIES

- Session Organizer, Statistical Society of Canada Annual Meeting, Wolfville, Canada, June, 2011.
- Session Organizer, International Conference on Design of Experiments, Memphis, TN, May, 2011.
- Session Chair, International Conference on Design of Experiments, Memphis, TN, May, 2011.
- Session Chair, Joint Statistical Meeting, Washington DC, August, 2009.
- Session Organizer and Chair, Spring Research Conference On Statistics in Industry and Technology, Vancouver, Canada, June 2009.
- Session Chair, Symposium on New Directions in Asymptotic Statistics, Athens, May, 2009.
- Session Chair, Spring Research Conference, Atlanta, May, 2008.
- Local organizer, NISS/SAMSI University Affiliates Annual Meeting, April, 2006.
- Session Chair, INFORMS Atlanta, October, 2003.
- Refereed grant proposals of National Security Agency.
- Reviewer of Journal of American Statistical Association, Annals of Applied Statistics, Technometrics, Statistica Sinica, Canadian Journal of Statistics, Statistics and Probability Letters, Journal of Statistical Planning and Inference, The American Statistician, Journal of Statistical Theory and

Practice, Computational Statistics and Data Analysis, Journal of Applied Statistics, Statistics in Medicine, IIE Transactions, IEEE Transactions on Automation, IIE Transactions on Quality and Reliability Engineering, Naval Research Logistics, Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, Computers and Industrial Engineering, Punjab University Journal of Mathematics, Chemometrics and Intelligent Laboratory Systems, Journal of Chemical Information and Modeling.

PROFESSIONAL
MEMBERSHIPS

American Statistical Association
Institute of Mathematical Statistics
INFORMS (Institute for Operation Research and Management Sciences)