

Sayar Karmakar

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(Current) Ph.D. candidate in Statistics, University of Chicago, (Expected June 2018)

Master of Statistics, Indian Statistical Institute, 2013.

Bachelor of Statistics , Indian Statistical Institute, 2011.

Publications

Submitted Journal Articles

Bahadur representation and simultaneous confidence bands of time-varying models:(2017) **Sayar Karmakar**, Stefan Richter, Wei Biao Wu; Under revision in *Annals of Statistics*.

Link: <https://sayarkarmakar.github.io/publications/sayar1.pdf>

Optimal Gaussian approximation under dependence:(2017) **Sayar Karmakar**, Wei Biao Wu; Under revision in *Statistica Sinica*

Link: <https://sayarkarmakar.github.io/publications/sayar2.pdf>

Long term prediction intervals of economic time-series:(2017) Marek Chudy*, **Sayar Karmakar***, Wei Biao Wu; Under revision in *Journal of Forecasting* [* equal contribution]

Link: <https://sayarkarmakar.github.io/publications/sayar3.pdf>

Journal Articles in Preparation

Prediction intervals for high dimensional regression: Sayar Karmakar, Marek Chudy, Wei Biao Wu; *Completed. pre-print available upon request*

Detection and test of synchronization of change-points in multiple time-series: Sayar Karmakar, Maggie Cheng, Wei Biao Wu *Completed. pre-print available upon request*

Gaussian multiplier bootstrap for non-linear time series: Sayar Karmakar, Wei Biao Wu *Completed. pre-print available upon request*

Asymptotic theory for dependent non-linear time-series with cyclic and trend components: Sayar Karmakar, Wei Biao Wu *pre-print available upon request*

Robust two-sample mean tests in presence of outliers: Sayar Karmakar, Ayanendranath Basu *Completed. pre-print available upon request*

Near unit-root models with time-varying coefficient: Sayar Karmakar, Mengyu Xu *in preparation*

Inference on models with non-Lipschitz and time-varying coefficients: Sayar Karmakar, Wei Biao Wu *in preparation*

Presentations and Talks

Invited Talk: Gaussian approximation and its several applications *Indian Statistical Institute, Kolkata* (UPCOMING:- Feb 2018)

Invited Talk: Simultaneous confidence bands in time-varying coefficient models. *University of Illinois at Chicago* Oct 2017

Talk: Robust two-sample mean tests in presence of outliers. *Indian Statistical Institute* May, 2013

Poster: Clustering approach to identify clones in tumors *Young Statistician's conference* Melbourne, Feb 2013

Talk: High exome mutational burden in 58 African Americans with persistent extreme blood pressure *Institute of Genetic Medicine* Baltimore, June 2012

Poster: Statistical Methods to Identify clonal variations present in Tumour *Conference on Contemporary Issues and Applications of Statistics*, Kolkata, January 2012

Poster: Identification and differentiation between driver and passenger mutation applying clustering algorithm on next gen sequencing data. *61st ASHG meeting* Montreal, Canada, October 2011.

Talk: A brief review of geometric probability. *D. Basu Memorial Award*, Indian Statistical Institute, Kolkata, September 2011

Research Interests

Time series analysis, Dependent data analysis, Gaussian multiplier bootstrap, Simultaneous inference of regression model, Functional data analysis, Change-point analysis, Analyzing periodical and cyclical variations, Embedding and strong invariance principle, Econometrics, High dimensional statistics, Sparse graphs, Tournament problems, Robust statistics, Genetics

Teaching Experience

As Full-time Instructor

Stat 234: Instructor in Autumn 2015

Chicago Academic Achievement Program: Instructor of Statistics in Summer 2016

Stat 234: Instructor in Summer 2017

As Teaching Assistant

Graduate courses: STAT343, STAT345, STAT315

Undergraduate courses: STAT244, STAT245, STAT251

The responsibilities include holding regular Office hour, Doubt-clearing sessions, Problem sessions, Grading weekly homeworks, midterms and finals. Occassionally, I also suggested problems for Midterms, finals and thus help design the exams. Due to my experience in teaching, I had the chance to lecture multiple times in the absence of the corresponding Professors.

As Tutor

College Core Tutoring Program at University of Chicago: Tutored for 8 quarters between 2014-2016.

Mathematics Olympiad tutor: 2008-2013. My students bagged one Gold, one Bronze and two Honorable mentions at International Mathematics Olympiad in different years.

Statistics Consulting Experience

Effect of native /sign language on gesture pattern: Dinah Shender (Co-leader), Sayar Karmakar (Co-leader), Ye Tian, Fan Yang and Nuoya Zhou.

Grave Dating and Gender Roles: Mengyu Xu (Leader), Sayar Karmakar, Bo Luan

Effect of Rurality on Degree Attainment in College: Sayar Karmakar (Leader), Shan Lu

Chinese restaurant process to study inventor-patent relationships: Sayar Karmakar (Leader), Guanzhou Chen, Jinhan Ahn, Yangze Zhou.

Refereed Journals

Annals of Statistics, Electronic Journal of Statistics, Statistics and Probability letters

Awards

Statistics

Runners up in the Statistics Consulting Program 2016-17 at University of Chicago.

Nominated for best tutor in Statistics in both 2014-15 and 2015-16 at the Core college tutoring program
2nd prize for poster in Young Statistician's Conference, 2013, (Organized by SSAI)

USPROC 4th prize, 2011 (Organized by Consortium for the Advancement of Undergraduate Statistics Education, <http://www.causeweb.org/usproc>)

IAS Summer Fellowship, 2011 to allow a review project on Geometric Probability under supervision of Prof. A. M. Mathai

Others

Debesh Kamal Scholarship, 2013

Deans list, Indian Statistical Institute, 2008-2013

KVPY scholarship, 2009-2013

Rank 3, Regional Maths Olympiad, West Bengal, India 2012

Inspire Scholarship, 2010-2013

NCERT Scholarship, 2006-2008

Rank 1, National level Science Talent by "Jatiyo Biggyan Porishod" 2005

Top ranks in Statewise Mathematics talent by ADTM 2002-2007