Soham Bonnerjee

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"When you have eliminated the impossible, whatever remains, however improbable, must be the truth."
Sir Arthur Conan Doyle

Personal Details

Nationality	Indian
Birth	28 February, 1999
Address	2/14,Neelam Abasan, P.O Nimta, Kolkata-700049,West Bengal,India
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Education

Bachelor of Statistics (Hons.) 2016-2019
Indian Statistical Institute, Kolkata
percentage : 83.87

Higher Secondary Education 2014-2016
Hindu School, Kolkata
percentage in Higher Secondary Examination, WBCHSE Board: 95.6

Secondary Education 2009-2014
Hindu School, Kolkata
percentage in Secondary Examination, WBBSE Board: 95.9

Work and Research Experience

May 2019 -ongoing
Research topic: **On The Shorter Length of Adaptive Confidence Intervals over Standard Confidence Intervals**
Guide: Dr. Peter D. Hoff, Statistical Science Department, Duke University, USA.

- For a Gaussian model, provided a class of confidence intervals (by considering Biased Tests) which is on the average, shorter than the standard confidence intervals when the average was taken over a Normal Prior.
- Tried to show theoretically and using simulations that the method considering Normal Prior gives shorter CIs on the average even if we do not have the exact prior distribution specified, as long as we know the correct mean and variance of the prior distribution.

- Ongoing Arxiv submission.

January 2019 - May 2019

Research Project on **Onset-Detection-A New Approach to QBH Systems**.
Project Advisor: Dr. Arnab Chakrabarty, ASU, ISI Kolkata, India (as part of the Statistics Comprehensive Course).

- Developed three new method for identifying songs when the input is just the hummed first verse, known as "Query by Humming"(QBH) problem, by transforming it into an Onset Detection problem.
- Developed an efficient correlative subset matching algorithm.
- Accepted for Presentation in Computing Conference 2020, London, United Kingdom.

May 2018 - July 2018

Project on **Mixing Time of the Juggling Chain**.
Project Advisor: Prof. Arvind Ayyer, Dept. of Mathematics, IISc Bangalore, India.

- Formulation of the Juggling Chain as an Irreducible Aperiodic Markov Chain.
- Finding expression for the Stationary Distribution.
- Lower Bounds on Mixing Time for simple cases of Juggling Chain and Upper Bounds on Mixing time for general cases assuming Uniform Distribution.
- Studying relevant papers and Books on theory of Mixing times, Hitting times and Cover Times.

October 2017

Attended **Madhava Mathematics Camp**, organized by the Department of Mathematics, S.P.College, Pune and Homi Bhaba Centre for Science Education, TIFR Mumbai (Selected and participated).

June 2017- July 2017

Project on **General Set Theory and Logic**
Project Advisor: Dr. S.M.Srivastava, Stat-Math Unit, ISI Kolkata

- Reading on various Paradoxes of Set Theory.
- Reading and understanding Zorn's Lemma.
- Studying contribution of Godel in the foundation of set theory and logic.

May 2017

RC Bose Internship on Cryptography,ISI Kolkata

- Introduction to Cryptography.

- Symmetric and Public Key Cryptosystems.
- Introduction to RSA and AES.
- Introduction to Cryptocurrency.

Achievement and Scholarships

July 2016-Present
Recipient of monthly stipend from ISI Kolkata for maintaining satisfactory performance (>60%) in each semester.

January 2019
Received prize money from ISI Kolkata for outstanding performance in first semester of third year.

January 2017
Received prize money from ISI Kolkata for outstanding performance in first semester of first year.

2016
Secured 15^{TH} position in West Bengal in Higher Secondary Examinations.

2014
Secured 11^{TH} position in West Bengal in Secondary Examinations.

2009-2016
Annual awards from Hindu School, Kolkata for excellent performance and topping the class from sixth to twelfth grade.

Languages

Bengali	Mothertongue
English	Fluent
Hindi	Fluent

Computer Skills

Programming	R, C, Python, MATLAB, LaTeX
O.S	Windows, Linux
Others	Excel, Powerpoint, Word

Academic Topics of Interest

Research Interests: :
Probability, Stochastic Process, Discrete and Continuous Time Markov Chains and their

Mixing Times, hitting times and cover times, Abstract Algebra, Combinatorics and Graph Theory, Hypothesis Testing and Inferential Statistics, Regression Theory, Bayesian Analysis.

Other Interests: :

Set theory, Fourier Analysis, Random Graphs, Neural Networks, Linear Algebra, Pattern Recognition, Application of Markov-Chain-Monte-Carlo(MCMC) in Genetics and Ecology.

Extracurricular Activities

- Music & Playing Guitar
- Painting
- Watching Movies
- Travelling
- Reading Books
- Writing poetry, prose etc
- Cricket
- Photography