

Sayan Biswas

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Education

University of Bath

Bath, United Kingdom

Leading to Master of Mathematics (hons.)

2016 - 2020 (Expected)

- 1st Year Average: 75.20%
- 2nd Year Average: 74.30%
- 3rd Year Average: 63.80%
- 4th Year Average: 66.50%
- Modules: Algebra 1A,1B; Analysis; Probability and statistics 1A,1B; Methods and applications 1A,1B; Programming and discrete mathematics; Algebra 2A,2B; Analysis 2A,2B; Numerical analysis; Probability 2A,2B; Statistics 2A,2B; Functional programming; Markov processes and applications; Advanced real analysis; Measure theory and integration; Classical statistical inference; Number theory; Stochastic processes and finance; Graphs and networks: theory and applications; Functional analysis; Probability with martingales; Discrete probability; Generalised Linear Models; Optimisation methods of operational research; Medical statistics; Machine Learning; Bayesian Statistics; Time series; Cybersecurity; Cryptography

South Point High School

Kolkata, India

CBSE

2002 - 2016

- Graduated with 85.2% (All India Senior School Certificate Examination 2016)
- Subjects in senior years: Mathematics, Computer Science, Physics, Chemistry, English

Research Experience

Quantifying Identifiability

University of Bath

M.Math final year research project

September 2019 - May 2020

- Analysing the re-identification of anonymous data from large data sets, quantifying the privacy of the data-points and aggregating the data in a statistically sensible way preserving the privacy and utility of the data set
- Supervised by Prof. James Harold Davenport.

Optimising Differential Privacy Mechanisms

INRIA Saclay, École Polytechnique Paris

Undergraduate Research Internship

June 2019 - September 2019

- Worked on retrieval of statistical information from noisy data resulting from a sanitisation process and optimising differential privacy mechanisms in this process.
- Supervised by Dr. Catuscia Palamidessi.
- Funded by COMETE Research Team of INRIA Saclay.

- **Search and Jump Markov Chain Monte Carlo Methods** IMI, University of Bath
Undergraduate Research Internship *June 2018 - September 2018*
 - Worked on implementing some new approach and MCMC methods on some very ill-behaved distributions. In the later stage, I worked on producing a similar algorithm for high-dimensional, distributions with thin-supports, for searching and communicating between the modes.
 - Supervised by Prof. Christopher Jennison.
 - Funded by Institute for Mathematical Innovation, University of Bath.

Conferences, Summer Schools and Workshops

- **DigiCosme Spring School** Paris
Lectures and workshops on Formal Methods and Machine Learning *June 2019*
- **Summer School Marktoberdorf by TU Munich** Marktoberdorf
Lectures on Safety and Security of Software Systems: Logics, Proofs, Applications *August 2019*
- **ACM Conference on Computer and Communications Security** London
Workshops on differential privacy and machine learning *November 2019*
- **AAAI Conference on Artificial Intelligence** New York City
Workshop on privacy preserving AI, Student outreach workshop on AI in robotics *February 2020*

Teaching Experience

- **University of Bath**
Tutor for first-year undergraduates *October 2018 - present*
 - “Programming and Discrete Mathematics” (2018-19: Semester 1, Semester 2)
 - “Algebra 1A” (2019-20: Semester 1)
 - “Probability and Statistics 1B” (2019-20: Semester 2)
- ^{47th} **National Mathematics Summer School** Leeds, United Kingdom
Invited student-speaker *July 2018*
 - Talk on “Pigeonhole Principle for Maths Olympiads”
- **Humen Foreign Language School** Humen, China
Foreign Exchange Teacher *July 2017 - August 2017*
 - Taught Mathematics and English at the International Summer Camp

Other Work Experience

- **University of Bath**
Lead student-editor of the department newsletter *November 2018 - present*
- **Mathscon**
Coordinator *February 2017 - November 2019*
 - Leading the committee for the largest student-lead mathematics organisation of the United Kingdom
- **United Kingdom Mathematics Trust**
Mentor for olympiad mathematics *January 2017 - present*

Awards and Achievements

- Qualified the UK and Ireland Programming Contest (UKIEPC) (first solver of problem 5 in the UK and Ireland); participated in the the North-West European Regional Contest (NWERC) in Eindhoven University of Technology, the Netherlands, representing University of Bath (2018)
- Qualified the Regional Mathematical Olympiad (top 28 in West Bengal, India), organised by the National Board of Higher Mathematics and Homi Bhaba Centre for Science and Education (2013, 2014)
- Qualified the national stage of Panini Linguistics Olympiad, being in the top 15 in India; attended the International Linguistics Olympiad Training Camp and invitational round at Microsoft Research Lab, India; received Honourable Mention (2015)
- Qualified the final round of Indian National Philosophy Olympiad 2016, being in the top 10 from India; received Honorable Mention in the International Philosophy Olympiad Training Camp (2016)
- Qualified the Zonal Informatics Olympiad, organised by the Indian Association for Research in Computing Science, being in the top 6 from Kolkata, India (2016)