SAYAN DAS

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Education

Jadavpur University *Aug 2023 - Jul 2027 (expected)*
Bachelor of Science (Honours) in Mathematics with Research
Minors in Statistics and Computer Science
Maths courses: Real Analysis, Linear Algebra, Abstract Algebra, Ring Theory, Numerical Analysis, Metric Space & Differential Geometry, Ordinary Differential Equations.
NPTEL courses: Algebraic Number Theory.
CS courses: Programming Languages, Database Management Systems, Data Structurs & Algorithms in Python.
Stats courses: Probability & Descriptive Statistics, Probability Distributions and χ^2-test.

Research Interests

I am primarily interested in analytic number theory - both multiplicative and additive, but am also interested in algebraic number theory and Diophantine geometry. Harmonic analysis, algebraic geometry, probability theory and combinatorics interest me as well, when connected with number theory.

Research Experience

Summer Internship in Analytic Number Theory 1 Jul 2025 - 31 Jul 2025
Supervisor: Prof. Satadal Ganguly Indian Statistical Institute Kolkata

- Worked through Apostol's *Introduction to Analytic Number Theory.*
- Learnt about the distribution of primes, asymptotic estimates of arithmetic functions.
- Learnt about Dirichlet characters and L-functions in connection with Dirichlet's Theorem on primes in arithmetic progression
- Learnt about Fourier series for periodic arithmetic functions, Ramanujan sums and Gauss sums in connection with quadratic reciprocity.
- Studied Atle Selberg's proof of the Prime Number Theorem. [1]

Volunteering

Content Team Assistant Convenor Sep 2024 - Present
Jadavpur Math Society

- Contributed to the Jadavpur Math Society magazine [2] and daily problems list.
- Set the question paper for and helped organise Mathemagician at JU's annual tech-fest Srijan 2025, which included checking and grading answer scripts.

Articles

[1] S. Das, *Selberg's elementary proof of the prime number theorem*, Link to draft, 2025.
[2] S. Das, *Fermat's last theorem for regular primes*, Link to draft, 2025.

Projects

Numerical Analysis Mar 2025 - May 2025

- Implementations of some common numerical algorithms in MATLAB.
- Contains algorithms for linear systems, nonlinear systems, eigenvalues and eigenvectors of a matrix, differential and integral equations.

Achievements

Algebraic Number Theory, NPTEL IISc course topper, achieved the highest score: 71%. *May 2025*
Jadavpur BSc Math Entrance Exam, ranked 49 out of 2600 candidates. *Jun 2023*

Workshops

Winter School on CS Theory Dec 2024
Indian Institute of Science Bangalore

- One of only 3 students selected to attend the winter school from Jadavpur.
- Attended lectures on matching theory and differential privacy.

Skills

Programming Languages	C, C++, Python, SQL, MATLAB, C#, Java, JavaScript, HTML/CSS
Developer Tools	Make, CMake, Vim, Neovim, Git, PowerBI, VS Code, Visual Studio, IntelliJ, Eclipse, Unity, Unreal
APIs, Frameworks, & Libraries:	Pandas, NumPy, Matplotlib, PyTorch, Tensorflow, Scikit, Boost, SFML, Vulkan

References

1. Prof. Shamik Ghosh,
   Professor, Department of Mathematics, Jadavpur University
   Address: Department of Mathematics, Jadavpur University, Kolkata - 700032, India.
   E-Mail: shamik.ghosh@jadavpuruniversity.in.

2. Prof. Subhas Chandra Mandal,
   Professor (Head of Department), Department of Mathematics, Jadavpur University
   Address: Department of Mathematics, Jadavpur University, Kolkata - 700032, India.
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