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 number theory - both algebraic and analytic. In particular, I am interested in automorphic forms, subconvexity of L-functions, equidistribution, sieve theory, prime numbers, Iwasawa theory, and harmonic analysis on number fields i.e. Iwasawa-Tate 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.
- Culminated with an exposition of 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 and nonlinear systems, eigenvalues, differential and integral equations.

Achievements

Algebraic Number Theory May 2025
NPTEL, Indian Institute of Science Bangalore

- Achieved the highest score: 71%.
- Distinguished myself as the only course topper per course statistics.

Jadavpur University BSc Math Entrance Exam Jun 2023

- Ranked 49 out of 2600 candidates.

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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