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 interested in analysis and number theory. Applied and computational problems also interest me.

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 classical techniques in analytic number theory.
- Culminated with an exposition of Selberg's proof of the Prime Number Theorem. [1]

Data Science Internship[2] July 2024 - Oct 2024
Supervisor: Dr. Snehalika Lall IDEAS TIH, Indian Statistical Institute Kolkata

- Trained a model that identifies when to enter (buy) and exit (sell) trades for optimal profit.
- Model trained on historical stock market (S&P 500) data.
- Performance measured using Sharpe ratio, creates around 40% adjusted returns.

Volunteering

Content Team Assistant Convenor Sep 2024 - Present
Jadavpur Math Society

- Contributed to the Jadavpur Math Society magazine [3] 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, A. Dasgupta, A. N. Minj, and D. Ghosh, *Machine learning model for optimal stock trading*, Link to draft, 2024.
[3] S. Das, *Fermat's last theorem for regular primes*, Link to draft, 2025.

Other 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.

Gestalt - An Anti-Danmaku Game — July 2023

- Made for the GMTK 2023 game jam in just 48 hours.
- Used SFML and C++; implemented animations and game physics in 2D.

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.
   E-Mail: scmandal.ju@gmail.com.