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Shyam Banerjee B.Stat.

About Me

I am a second-year undergraduate at the Indian Statistical Institute, Kolkata, with a strong foundation in statistical theory and a growing portfolio of research-driven projects. My interests lie at the intersection of probability, machine learning, and real-world applications—ranging from astrophysical simulations to financial analytics. With a background in Olympiad mathematics and hands-on experience in Python-based modeling, I specialize in solving complex problems using data, inference, and simulation. I'm actively seeking research and internship opportunities to further deepen my expertise in quantitative science and applied statistics.

Education

Indian Statistical Institute (ISI) Kolkata, India
Bachelors in Statistics (B.Stat) 2024 - Present
- Aggregate 85% (First Year)
- Incoming Sophomore

Gitanjali Public School Sainthia, WB, India
12th Grade (CBSE) 2024
- Overall 95%

Gitanjali Public School Sainthia, WB, India
10th Grade (CBSE) 2022
- Overall 97.4 %

Course Topics

- Statistical Methods, Probability Theory
- Real Analysis, Linear Algebra
- Data Structures and Algorithm, Numerical Analysis

Projects

Simulating Posterior Inference for Periodic Signals
Inspired by Dr. T. Loredo's lectures (Penn State Summer School, 2025) 2025.07

- Implemented a Bayesian sinusoidal model using PyMC.
- Formulated and applied harmonic models to Kepler 1 & 2 data.
- Visualized posterior predictive signal recovery with 95% credible bands.

Simulating Noisy Stellar Light Curves using Sinusoidal and Gaussian Processes
Inspired by Dr. S. Aigrain's lectures (Penn State Summer School, 2025) 2025.06

- Modeled stellar brightness variability using GP kernels (RBF & QP).
- Performed regression on Kepler 2 data to reconstruct quasi-periodic signals.

Analysis of Variance in Pixel Values in Multiple Captures
Supervised by Dr. Arnab Chakraborty, ISI Kolkata 2025.05

- Analyzed image noise artifacts via variance decomposition across frames.
- Evaluated statistical significance of pixel-level deviations.

Exploratory Analysis of NSSO HCES (for Per-Capita Contrasts)
Supervised by Dr. Debasis Sengupta, ISI Kolkata 2024.10

- Conducted statistical exploration of household consumption data to infer economic disparity indicators.

Academic Distinctions and Enrichment programs

- **Summer School for Astrostatistics** (Penn State University)
- **Madhava Nurture Camp** (Bhasarachariya Pratisthana, Pune)
- **Mathematics Olympiad - National level**: Qualified Regional Mathematics Olympiad (RMO) in 2021 and 2022; participated in Indian National Mathematics Olympiad (INMO) twice.
- **National Science Camp Attendee - VVM**: Selected for National-level Science Camp in 2020 after qualifying state-level prelims.

Skills

- **Languages**: English, Hindi, Bengali, German.
- **Programming**: `Python`, `C++`, `R`.

Interests

- **Music**: Pop, EDM
- **Reading**: Fantasy, Sci-Fi