

SOMJIT ROY

◇ +1(979) 344-3408 ◇ 3143 TAMU, 155 Ireland St, College Station, TX 77843, USA
◇ sroy_123@tamu.edu ◇ Google Scholar ◇ Github ◇ LinkedIn ◇ Homepage

EDUCATION

Texas A&M University , College Station, Texas, USA Doctor of Philosophy (Ph.D.) in Statistics Advised by Bani K. Mallick (TAMU Statistics) and Debdeep Pati (UW Madison Statistics).	2023 — present GPA: 4.00/4.00
University of Calcutta , Kolkata, West Bengal, India Master of Science (MSc.) in Statistics (<i>Ranked First Class First</i>)	2021 — 2023 GPA: 8.15/10.00
St. Xavier's College , Kolkata, West Bengal, India Bachelor of Science (BSc.) in Statistics (Hons.)	2018 — 2021 GPA: 8.63/10.00

EXPERIENCE

Los Alamos National Laboratory Graduate Summer Intern	May 2025 — Aug 2025 Los Alamos, NM, USA
• SPINWAVE: Scalable Physics-Informed Neural Operator for Seismic WAVE Modeling. • Advised by Kai Gao & Ting Chen in <i>Earth and Environmental Sciences</i> (EES-16) division. Developing scalable framework for seismic wave modeling using Physics-Informed Neural Operators (PINO).	
Tata Electronics Pvt. Ltd. Data Science Intern	May 2021 — Aug 2021 Bangaluru, KA, India
• Statistical Analysis and Optimization of Sandblasting & Anodizing. • Supervised by Nagasubramanian Kothandaraman (Tata Electronics Pvt. Ltd.) & Subhamoy Maitra (ISI, Kolkata). Identified key features affecting material properties (gloss and texture) and optimized process parameters using local minimization, machine learning models, and variability analysis. Successfully reduced costs by 2 mandays.	

PAST RESEARCH POSITIONS & PROJECTS

University of Maryland , College Park Research Fellow	Sep 2022 — May 2023 College Park, MD, USA
• Addressing Nonresponse in Surveys through Imputation & An Application to Social Sciences. • Supervised by Partha Lahiri in <i>Department of Mathematics</i>. This work resulted into my master's dissertation. Nonresponses in primary household survey data were augmented by a general class of imputation technique viz., Nearest Neighbor Hot Deck Imputation (NNHDI), with an application to multidimensional poverty.	
Indian Institute of Science, Education & Research , Kolkata IASc-INSa-NASI Summer Research Fellow	Jun 2022 — Aug 2022 Kolkata, WB, India
• On Nonparametric Statistics. • Supervised by Anirvan Chakraborty in <i>Department of Mathematics and Statistics</i>. Studied different techniques in nonparametric inference and estimation: estimating statistical functionals, density estimation, curve estimation, and normal means (minimax theory), jackknife, d-deleted jackknife, and bootstrap.	
Indian Statistical Institute , Kolkata Research Intern	Oct 2021 - May 2022 Kolkata, WB, India
• Supervised by Dr. Subhamoy Maitra in <i>Applied Statistics Unit (ASU)</i>. • A Heuristic Framework to Search for Approximate Mutually Unbiased Bases: A heuristic framework was developed to obtain optimal number of Mutually Unbiased Bases (MUBs) through the construction of Approximate MUBs (AMUBs) in dimensions $d = 6, 10, 46$ from $d' = 7, 11$ and 47 respectively.	

- **Almost Perfect Mutually Unbiased Bases that are Sparse:** As an extension to ^{**}, we propose the concept of **Almost Perfect MUBS (APMUBs)** to circumvent restrictions in construction of real MUBs, where our techniques are based on combinatorial structures. 

RESEARCH & PUBLICATIONS

My research spans **scientific machine learning**, **Bayes modeling & (approximate) Bayes theory** for real-world scientific problems, **optimization**, and **combinatorial designs/structures**.

7. **Roy, S.**, Gao, K., & Chen, T. (2025). ***SPINWAVE: Scalable Physics-Informed Neural Operator for Seismic WAVE Modeling***. (In preparation).
6. **Roy, S.**, Dey, P., Mallick, B. K., Pati, D., & Arróyave, R. (2025). *Multi-Property Materials Discovery using multivariate HierBOSSS*. (In preparation).
5. **Roy, S.**, Jaiswal P., Bhattacharya, A., Pati, D., & Mallick, B. K. (2025). *Frequentist Regret Analysis of Fractional Gaussian Process Thompson Sampling*. (In preparation).
4. **Roy, S.**, Dey, P., Mallick, B. K., & Pati, D. (2025). ***Hierarchical Bayesian Operator-induced Symbolic Regression Trees for Structural Learning of Scientific Expressions***. (**HierBOSSS**; submitted).
3. **Roy, S.**, Dey, P., Pati, D., & Mallick, B. K. (2025). *A Generalized Tangent Approximation Framework for Strongly Super-Gaussian Likelihoods*.  [arXiv:2504.05431](#) .
2. Kumar, A., Maitra, S., & **Roy, S.** (2024). *Almost Perfect Mutually Unbiased Bases that are Sparse*. **Journal of Statistical Theory and Practice** .
1. Chaudhury, S., Kumar, A., Maitra, S., **Roy, S.**, & Sen Gupta, S. (2022). *A Heuristic Framework to Search for Approximate Mutually Unbiased Bases*. In *Cyber Security, Cryptology, and Machine Learning. (CSCML) 2022. Lecture Notes in Computer Science, Springer, Cham* .

CONTRIBUTION TO SOFTWARE

R Packages on CRAN: **bayesestdft** (**Roy, S.** & Lee, S. Y., 2025), **GoodFitSBM** (Ghosh, S., **Roy, S.**, & Pati, D., 2024), **gamblers.ruin.gameplay** (**Roy, S.**, 2022), **YatesAlgo.FactorialExp.SR** (**Roy, S.**, 2021, Selected for a talk in the **useR** regional conference in Basel, Switzerland, July 2023).

SKILLS

- **Programming Languages & Technical Skills:** JAVA, C, C++, $\text{\LaTeX}$, Markdown, Git, & MS Platforms.
- **Statistical Software:** R (**RStudio**, **RStan**, **RShiny**) & Python (**PyTorch**, **Sklearn**, **Pandas**, **Numpy**, **OpenCV**).

AWARDS & FELLOWSHIPS

- **NSF Travel Grant & TAMU Statistics Department Student Travel Award** (for IISA 2024). 
- Awarded **Targeted Proposal Teams (TPT)** grant & scholarship by Texas A&M University. 
- Selected to attend **CMS³-FAST Summer School (2024)** in Texas A&M University. 
- Awarded the **R.C. Bose Memorial Book Prize (2022)** by Calcutta Statistical Association. 
- Awarded the **IASc-INSA-NASI Science Academies Summer Research Fellowship (2022)**. 
- Recipient of the **OPHI, University of Oxford - Summer School Grant (2022)**. 
- Awarded the **IAOS 2022 Conference and Travel Grant (2022)** by the World Bank. 

TALKS

- **IISA 2024:** On *Tangent Approximation for Variational Inference in different Exponential Families*. (Kochi, KL, India).

LEADERSHIP & EXTRA-CURRICULAR ACTIVITIES

- **Workflow Workshop Organizer (2024—2025)**, as a part of Statistics Graduate Student Association (SGSA) - TAMU.
- **Organizing Committee Member (2019—2020)**, as a part of the annual fest ϵ psilon δ elta organized by Department of Statistics, SXC Kolkata.