

Sakul Mahat

 [GitHub](#)  [LinkedIn](#)  [Email](#)

SUMMARY

PhD student in Statistics with a robust foundation in Machine Learning and Bayesian methodologies. Skilled in designing advanced statistical models and developing R packages. Experienced in applying supervised and unsupervised learning techniques to address complex, real-world challenges. Passionate about advancing research in Bayesian Networks and Graphical Models, particularly in the analysis of high-dimensional datasets.

EDUCATION

Texas A&M University

PhD in Statistics

College Station, TX

08/2022 - 2027

University of Mississippi

Bachelors in Physics & Mathematics

Oxford, MS

08/2018 - 05/2022

SKILLS

Languages/Database: R, Python, Java, C++, MySQL, PostgreSQL, MongoDB, L^AT_EX

Data Analysis/Visualization: Pandas, Numpy, Spicy, dplyr, tidy, Matplotlib, Seaborn, ggplot2, Tableau, PowerBI

Research Interest: Bayesian Nonparametrics, Networks & Graphs Theory, High-Dimensional Datasets

WORKING EXPERIENCE

Machine Learning Intern | St. Jude Children's Research Hospital

06/03 - 08/09

Project: Clustering subjects based on Neuroimaging dataset with Bayesian Sparse Tensor Decomposition Models.

Advisor: Dr. Cai Li

Graduate Research Assistant (GRA) | Texas A&M University

01/23 - Present

Project: Robust inference of Neutron Star Equation of State with Bayesian Empirical & Exponentially Tilted Empirical Likelihood (ETEL)

Advisors: Dr. Debdeep Pati & Dr. Anirban Bhattacharya

Undergraduate Data Science Research Assistant @ Belle-II | Olemiss

08/2019 - 05/2022

Projects: (i) Lifetime measurement of Charm Cascade & (ii) Monte Carlo study of LFV in leptonic tau decay

Advisor: Dr. Jake Bennett

TEACHING EXPERIENCE

Graduate Assistant Lecturer (GAL) | Texas A&M University

08/23 - 05/24

Lecturer for course STAT 201 - Elementary Statistical Inference

Fall 2023 (90 students), Spring 2024 (80 students)

Graduate Teaching Assistant (GTA) | Texas A&M University

Teaching Assistant (TA) for STAT 651 - Statistics in Research I (Fall 2022)

Teaching Assistant (TA) for STAT 201 - Elementary Statistical Inference (Fall 2024)

MANUSCRIPTS

- Bayesian Multiplex Graph Classifier of Functional Brain Connectivity Across Diverse Tasks of Cognitive Control (Under preparation)
- Robust Estimation of Neutron Star Equation of State using Bayesian Exponentially Tilted Empirical Likelihood (Under preparation)
- Bayesian Methods in AI (Survey Paper)

RELEVANT COURSEWORK

(i) Theory of Linear Models (ii) Probability for Statistics, (iii) Statistics Methodology I (iv) Bayesian Methodology, (v) Advanced Bayesian Model & Computation (vi) Advanced Statistical Computation (Viii) Applied Statistics & Data Analysis

SELECTED MACHINE LEARNING PROJECTS

MFMSBM R-Package

- The package proposes a coherent probabilistic framework for simultaneous estimation of the number of communities and the community structure using mixture of finite mixtures (MFM) to Stochastic Block Models (SBM).
- Paper Link: ([Click Here](#))

Predicting Bank Loan Defaults

- Employed supervised machine learning algorithms to predict bank loan defaults using a rich credit applicants dataset. Leveraging models such as Logistic Regression, K-Nearest Neighbors, Support Vector Machines, Decision Trees, and Neural Networks, built a binary classification model to predict and distinguish likely defaulters. Each model's performance was evaluated using the ROC AUC metric, optimizing them for maximum predictive accuracy.

SGD for Multi-Class Classification with Neural Nets

- Employed Stochastic Gradient Descent (SGD) to optimize deep neural networks for multi-class classification problems. Through hyperparameter tuning and analysis of convergence properties, assessed SGD's robustness and efficiency in handling multi-output continuous predictions within complex neural architectures.

CONFERENCES / POSTER PRESENTATION

Belle-II Summer School @ Brookhaven National Lab (NY)
South-Eastern Section of the APS @ Florida State University
Belle-II Summer School @ University of Hawaii

CERTIFICATIONS

(i) Udeemy's AWS Certified Machine Learning - Specialty Course Certification
Skills: Proficient in Amazon S3, Kinesis, Sagemaker

ORGANIZATIONS/LEADERSHIP

(i) Nepalese Student Association (NSA) - Vice President @ Olemiss (ii) Society of Physics (SPS) (iii) Residential Assistant(RA) (iv) American Statistical Association (ASA).

HONORS/AWARDS

Academic Excellence Scholarship, Auvergne Williams Scholarship, Bolen Scholarship, Chancellor's Honors Roll, Provost Scholar, High School Valedictorian, Sally McDonnell Honors College