AMARTYA KUMAR MAULIK

(970)889924 | Fort Collins, CO
Email | WebPage | LinkedIn

EDUCATION

PhD in Statistics, *Colorado State University* August 2022 - Present
GPA: 4/4

M.S. in Statistics, *Indian Institute of Technology, Kanpur (IITK)* August 2019 - May 2021
CGPA: 9.2/10

B.S. in Statistics, *University of Calcutta* August 2016 - May 2019
CGPA: 8.58/10 | Minor in Mathematics and Computer Science

SKILLS AND INTERESTS

Tools and Languages	R, Python
Modeling	Supervised and Unsupervised Learning (Clustering and Dimension Reduction), Regression, Data Analysis, Bayesian Computation, MCMC
Soft Skills	Communication, Problem Solving, Creativity

EXPERIENCES

Graduate Teaching Assistant August 2022 - Present
Colorado State University *Fort Collins, CO*

- Instructor for courses: Computing and Math Skills for Statistical Analysis; Intro to Applied Statistics
- Grader for courses: Regression Models and Applications; Mixed Models and Statistical Data Analysis

Data Analyst Intern, Intelligent Customer Interactions Team May 2020 - July 2020
Ford Motor Company (GDIA) *Chennai, India*

- Built a customer-level classification model in Python to predict the likelihood of purchasing Ford nameplates
- Mitigated class imbalance and compared logistic, decision tree, gradient boosting, and random forest models
- Identified random forest as best-performing (balanced accuracy: 55%)
- Improved segment-level separability by 33% through hyperparameter tuning

RESEARCH PROJECTS

A Bayesian Decision-Theoretic Approach to Multiple Testing in Basket Trials
Manuscript under Revision at *Biometrics*
Advisor: Tianjian Zhou *Colorado State University*

- Designed a scalable Bayesian decision-theoretic framework for multiple hypothesis testing across subpopulations
- Enabled adaptive information borrowing while retaining independent estimation and low computational cost
- Calibrated decision rules to satisfy frequentist error control targets relevant to regulatory decision-making
- Demonstrated performance through extensive simulation studies and a real-world clinical trial case study

Prediction tool for discharge disposition and 30-day readmission using electronic health records among patients hospitalized for traumatic brain injury
Published in *Frontiers in Neurology*
Advisor: Dr. Tianjian Zhou *Colorado State University*

- Built and validated EHR-based models predicting discharge disposition and 30-day readmission in hospitalized TBI patients
- Analyzed multi-hospital EHR data (2017–2023) integrating sociodemographic, clinical, and utilization variables
- Applied multinomial and logistic regression with AIC-based forward stepwise selection and cross-validated AUC
- Identified age, insurance, prior inpatient stays, ICU admission, and functional status as key outcome predictors

- Showed increased readmission risk with prior inpatient stays and ICU admission and lower risk with commercial insurance
- Deployed models as a clinical prediction tool supporting personalized discharge planning and risk stratification

Bayesian Functional Generalized Probit Mixed Model for Scalar-on-Function Regression
Advisor: Dr. Tianjian Zhou *Colorado State University*

- Formulated a scalar-on-function regression framework for categorical outcomes with spatially indexed predictors
- Incorporated subject- and limb-level mixed effects to account for within-horse and bilateral variability
- Used Bayesian inference with prior distributions to improve flexibility, and uncertainty quantification
- Applied the model to equine osteochondral disease data with four outcome categories and functional predictors measured at 19 positions
- Evaluated predictive performance and inferred spatially varying effects across left and right forelimbs

Hierarchical Sparse Mixture of Finite Mixtures (Ongoing)
Guide: Dr. Matt Koslovsky and Dr. Tianjian Zhou *Colorado State University*

- Developing a hierarchical sparse mixture model allowing group-specific activation of mixture components
- Using zero-inflated positive priors on component weights to relax global component-sharing assumptions
- Deriving posterior theory and Gibbs samplers

Martingales in Discrete Time
Guide: Dr. Supriyo Ghosh *Indian Institute of Technology, Kanpur*

- Explored the concept of martingales in discrete time and developed a strong understanding of the measure-theoretic approach for conditional expectation.
- Acquired substantial knowledge encompassing martingales, the Martingale Convergence Theorem, martingales bounded in $\mathcal{L}^2$, uniform integrability, and UI martingales.
- Familiarized me with essential concepts, including the Martingale Representation Lemma and the discrete Black-Scholes formula.

MCMC in Mixture Models
Guide: Dr. Dootika Vats *Indian Institute of Technology, Kanpur*

- Modeled a simulated statistical distribution by a mixture of other distributions using the infinite Dirichlet mixture model without assuming a finite number of clusters.
- Implemented Collapsed Gibbs, Blocked Gibbs, and Slice Sampling methods for parameter updates in R

AWARDS

James R. ZumBrunnen Award (*CSU Department of Statistics*) 2025
Elmer E. Remmenga Scholarship (*CSU Department of Statistics*) 2024

ACTIVITIES

Director of Finance, Indian Students Association Fall 2023 - Spring 2024
Organizer, Student Organized Activities and Research Seminars (SOARS) Spring 2023 - Fall 2023

REFERENCES

Dr. Tianjian Zhou
Assistant Professor
Department of Statistics
Colorado State University
Email: tianjian.zhou@colostate.edu
Personal Webpage

Dr. Matt Koslovsky
Assistant Professor
Department of Statistics
Colorado State University
Email: matt.koslovsky@colostate.edu
Personal Webpage