Shikha Shrestha

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EDUCATION

WASHINGTON UNIVERSITY IN ST LOUIS   St. Louis, MO
Ph.D. in Computational & Data Sciences   **August 2025 - Present**
SWARTHMORE COLLEGE   **Swarthmore, PA**
Bachelor of Arts in Mathematics, Computer Science   **August 2020 - December 2024**

RESEARCH EXPERIENCE

SWARTHMORE COLLEGE, COMPUTER SCIENCE   **Swarthmore, PA**
Supervisor: Dr. Ben Mitchell   **May 2023-Sep 2023 | June 2024-Aug 2024**

- Conducted in-depth research on the impact of imputation and imputation timing on machine learning model performance estimate, comparing imputation before train/test split (IBS) and after train/test split (IAS).
- Developed and executed experiments using multiple datasets, evaluated the effects of different imputation methods (Mean, KNN, Random Forest, Multiple Imputation) on classifier accuracy, with a focus on bias, overestimation, and underestimation of performance metrics.
- Presented research findings in a poster at the 2024 Capital Region Celebration of Women in Computing, organized by the Association for Computing Machinery (ACM).

SWARTHMORE COLLEGE, MATHEMATICS   **Swarthmore, PA**
Supervisor: Dr. Suzanne Thornton   **June 2022-Aug 2022**

- Analyzed missing data in a longitudinal study to uncover patterns of gender diversity, focusing on the impact of gaps in the gender variable.
- Applied advanced clustering algorithms (K-means, DBSCAN, Gaussian Mixture Models) to identify patterns in data under varying levels of missingness, using the Expectation-Maximization (EM) algorithm for parameter estimation.
- Conducted sensitivity analysis on statistical models (e.g., linear regression, logistic regression, and random forests) to evaluate changes in coefficient estimates and prediction accuracy due to missing data.
- Presented research findings through a poster at the Joint Statistical Meeting 2023, organized by the American Statistical Association (ASA).

INFORMATION SCIENCE INSTITUTE, UNIVERSITY OF SOUTHERN CALIFORNIA   **Marina Del Rey, CA**
Cybersecurity Research Volunteer   **Jan 2022-June 2022**

- Developed interactive visualizations to analyze and highlight Internet outage events, enabling deeper exploration of network fragility during real-world phenomena (e.g., wars, protests, celebrations).
- Enhanced the functionality of the ANT Outage World Map (outage.ant.isi.edu), integrating features to provide actionable insights into the causes and impacts of Internet outages.
- Collaborated with interdisciplinary teams to refine tools for monitoring global Internet disruptions and assess their implications on cybersecurity and digital infrastructure resilience.

WORK EXPERIENCE

QUEST DIAGNOSTICS   **Secaucus, NJ**

Health Informatics Intern (Remote)   **Dec 2023-Feb 2024 | Sep 2024-Nov 2024**

- Built a time series forecasting model using Python (Prophet, ARIMA) with 87% accuracy in predicting test volumes.
- Designed and implemented a data integration framework to combine structured lab results and unstructured clinical notes using natural language processing (NLP) techniques.
- Combined results into an Apache Spark environment to create a unified dataset for downstream analysis

SWARTHMORE COLLEGE   **Swarthmore, PA**
Teaching Assistant, Machine Learning (CS 066)   **Aug 2024-Present**

- Assisted in teaching core machine learning concepts, including supervised and unsupervised learning, model evaluation, and algorithm implementation, to undergraduate students.
- Supported students' understanding of machine learning algorithms by providing one-on-one guidance and clarifying complex topics during office hours.
- Collaborated with the course instructor to develop assignments, and grading rubric.
- Evaluated student performance on assignments and offered constructive feedback.

IT Associate   **July 2022-May 2023 | Jan 2024-May 2024**

- Provided frontline technical support for 1,600+ students and 100+ faculty and staff, resolving a wide range of technology issues, dedicating 10+ hours per week.
- Set up and troubleshoot computers, phones, printers, and other equipment, while also imaging campus-owned devices and managing inventory
- Served as a tech liaison, managing cloud-based systems and APIs, and collaborating with staff to ensure efficient problem-solving and effective troubleshooting.

DUOLINGO   **Pittsburg, PA**
Software Engineer, Thrive Intern   **June 2023-Aug 2023**

- Worked with the data science team to build an internal dashboard using React and D3.js to visualize user engagement data. This dashboard helped identify key bottlenecks in user progression and guided the refinement of personalized content delivery strategies.
- Designed and implemented a real-time user feedback system that adjusted learning content dynamically based on user input and activity, ensuring an adaptive learning experience.

SMART GIRLS HQ   **Charlotte, NC**
Remote Intern   **Aug 2022-Dec 2022**

- Used web scraping to analyze potential products, services, and markets, and designed a MySQL database schema with over 25 tables, ensuring 100% accuracy in data collection and reporting.
- Converted data into actionable insights by predicting future outcomes using dplyr, and developed interactive dashboards to visualize key metrics and trends.
- Conducted market research and wrote a report detailing key findings and recommendations for senior management.

UPCHIEVE   **New York, NY**
Volunteer Tutor   **May 2022-Present**

- Provided one-on-one and group tutoring sessions online in Geometry, Algebra 2, PreCalculus, AP Calculus AB to low income high school students.
- Supported 24 students, accumulating over 80 hours of instructional time.

PUBLICATIONS

B. Mitchell and **S. Shrestha**, "**The Impact of Imputation Timing on Model Performance Estimation**," *2025 IEEE International Conference on Artificial Intelligence Testing (AITest)*, Tucson, AZ, USA, 2025, pp. 201-208, doi: 10.1109/AITest66680.2025.00032.

POSTER PRESENTATIONS

ACM Capital Region Celebration of Women in Computing   **April 2024**
 "Assessing Model Performance Estimation in the Presence of Missing Data"
 American Statistical Association Joint Statistical Meetings   **August 2023**
"Uncovering Gender Diversity Through Missing Data Analysis"
Sigma Xi - Swarthmore College   **September 2022**
"An Analysis Of Missing Data Patterns To Uncover Gender Diversity"

AWARDS & GRANTS

Amplify Grant *Awarded $3,000 for project that support engagement with climate change at Swarthmore College*   **Feb 2024**
Sigma Xi Summer Research Grant *Swarthmore College*   **May 2024**
Robin M. Shapiro '78 Summer Research Fellowship *Swarthmore College*   **May 2023**
Richard Rubin Scholar *Swarthmore College*   **May 2022**
Faculty Led Engaged Research Grant (**FLER**) **Grant** *Swarthmore College*   **May 2022**
Charles F. Barber Scholarship *Swarthmore College*   **August 2023, 2024**
Cambridge Outstanding Learners Award *Trinity College, Nepal*   **August 2020**
Bronze Medal - International Economics Olympiad *St Petersburg, Russia*   **July 2019**

PROGRAMMING LANGUAGES & SOFTWARES

Languages: Python, C/ C++, R, Java, SQL, Stata, LaTeX, MATLAB, Assembly Language, Haskell, Prolog
Softwares: Docker, GIT, GitHub, Linux, Datadog, Google Cloud Platform