Reefayat Bin Shahjahan

135 West Lorain Street, Oberlin, Ohio 44074
929-920-8306 rshahjah@oberlin.edu https://www.linkedin.com/in/reefayat/ https://github.com/reefayatbs

Education

Oberlin College **Sep. 2021 – May 2025**
Bachelors in Mathematics with Minors in Physics and Computer Science; CGPA: 4.02/4.00 *Oberlin, Ohio*

Relevant Coursework

- Data Structures
- Data Science with R
- Mathematical Statistics
- Probability
- Statistical Modeling
- Computational Modeling
- Discrete Mathematics
- Linear Algebra

Technical Skills

Languages: Python, Java, R
Developer Tools and Frameworks: VS Code, Jupyter Notebook, GitHub, JUnit
Libraries: Scikit-learn, OpenCV, Pandas, Numpy, Matplotlib, Flask, Tidyverse, Mosaic, MosaicModel

Experience

Oberlin College **June 2024 – August 2024**
Data Science Research Intern *Oberlin, Ohio*

- Creating a robust index to quantitatively assess the likelihood of census tract residents switching from air travel to intercity bus travel, using advanced statistical models such as binary logit.
- Utilizing unsupervised learning approaches such as k-means clustering and principal component analysis for conducting exploratory data analysis to understand patterns within the data.
- Utilizing R Studio and its libraries (sf, ggplot2, terra, tidyverse, dplyr) for comprehensive data collection, analysis, and geospatial assessment of travel time, cost, convenience, and accessibility.
- Integrating policy measures, sustainability metrics, and scenario testing to predict travel behavior shifts and provide actionable insights for transportation planning and policy formulation.

The Ohio State University **May 2023 – August 2023**
Experimental Physics Research Intern *Columbus, Ohio*

- Developed and implementing cutting-edge NMR methodologies to investigate complex nuclear interactions in chemical systems, enhancing the understanding of molecular structures and dynamics.
- Showcased proficiency in troubleshooting, debugging, and optimizing experimental protocols, resulting in enhanced research productivity and the resolution of technical challenges.
- Utilized critical thinking and data analysis skills to interpret experimental results, identifying trends and patterns that informed decision- making processes for project roadmap modifications.

Projects

Real-Estate Price Prediction in California | *Python* **June 2024**

- Implemented a data preprocessing pipeline and applied linear regression using scikit-learn to predict housing prices with an average R^2 value of 0.8 (confirmed using 5-Fold Cross Validation). Cleaned and transformed raw real estate data by dropping irrelevant features, handling missing values, and normalizing city names. Implemented statistical outlier detection and removal methods to enhance dataset robustness, ensuring realistic size-to-bedroom ratios and maintaining local market characteristics.
- Developed a Flask API to serve the model, enabling real-time price predictions. Implemented endpoints for retrieving city names and predicting home prices, ensured proper error handling, and added CORS support for cross-origin requests. The API handled JSON requests with seamless and accurate home price predictions.

Real-time Color Detection | *Python* **May 2024**

- Developed a real-time color detection system using OpenCV and Python, enabling dynamic color-based tracking by converting images to HSV color space and isolating target colors based on user input.
- Implemented robust features including real-time feedback with bounding boxes around detected colors, seamless camera operation with error handling for connectivity issues, and optimized continuous video capture and processing for live updates.

Leadership / Extracurricular

Oberlin College Academic Advising and Resource Center **February 2022 – Present**
Tutor *Oberlin College*

- Catered to students with varying technical backgrounds and levels of experience in assisting them through courses in Math and Physics.
- Created and implemented effective instructional strategies, including designing sample problems, to promote critical thinking and practical application of knowledge