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MEERA RAY

EDUCATION

Carnegie Mellon University
B.S. Statistics & Machine Learning,
Minor: Literature and Culture
(Graduation: May 2023)

Mission San Jose High School
(US News Ranking #1 in SF Bay Area, #5 in California Public Schools)

TEST SCORES

SAT: 1570 (E:790; M:780).
SAT 2 Math: 800, SAT 2 Chem: 740
Advanced Placement (AP):
Physics: 5/5, Statistics: 5/5,
Computer Science: 5/5,
Chemistry: 5/5,
Calculus AB: 5/5

AWARDS

2022: NSF Summer REU Funding Stipend

2018: National Merit Scholarship Finalist

2017: Google CodeCorps SuperStar Award (Most Enthusiastic Volunteer)

SUMMARY

Inquisitive, hard-working student with a passion for using machine learning to solve complex computational problems

SKILLS

- **Languages**: R, Python, HTML/CSS, JavaScript, SQL, Java
- **Repository:** github.com/meeraray
- **Data Science:** Fundamental calculus, statistics and linear algebra that power ML algorithms i.e. supervised vs unsupervised learning, hypothesis testing, backpropagation, gradient descent; data modeling; effective visualizations; model diagnostics and evaluation
- **Libraries & Tools:** NumPy, SciPy, scikit-learn, Matplotlib, Tidyverse, GGplot, GLM
- **Algorithms:** Multiple linear regression with transformation and interaction, General and Robust Linear Models, classification, nonparametric models
- **Innovation under Pressure:** Experience with Carnegie Mellon University Hackathons

COURSEWORK

College (Fall 2022):
- Algorithms and Advanced Data Structures
- Text Analysis (NLP)

College (Completed):
- Advanced Methods of Data Analysis
- Intro to Machine Learning
- 3D Modeling
- Modern Regression
- Statistical Graphics and Visualization
- Statistical Computing
- Principles of Imperative Computation
- Methods for Statistics and Data Science
- Matrix Algebra with Applications
- Multivariate Analysis
- Writing About Data

High School:
- AP Computer Science
- AP Statistics
- Intro to C++ and Data Structures

PROJECTS AT CARNEGIE MELLON UNIVERSITY (CMU) / SELF STUDY

Eye Tracking Keyboard: **Team Repository** January 2022
At Tartan Hacks (Carnegie Mellon University's biggest hackathon), my team created a keyboard operated by looking at the screen. I used computer vision libraries, JavaScript, and HTML/CSS.

Predicting Patient Satisfaction: Full Report (PDF) December 2021
Trained a logistic and forest classifier on asthma patient data using Tidyverse and ggplot in R to predict patient satisfaction. Causal inference techniques used, gleaned insights from exploratory data plots.

December 2021

Customer Personality Analysis: Online Version, Full Report
Used data visualizations with GGplot and statistical tests in R to analyze the behavior of customers based on demographics and purchasing behaviors. I produced Research Question 1 in a collaborative final project for my Statistical Graphics and Visualizations class.

November 2019

Predicting Dress Sales with Machine Learning
https://drive.google.com/file/d/1nwPIIc3AA0lOn9pE5QeTKwtjomAH6go0/view?usp=sharing
Using machine learning algorithms, analyzed data from retailers to predict which dresses should be put on sale based on the characteristics of each dress. Wrote a paper for Methods of Statistics and Data Science course at CMU.

Wallpaper Changer, https://github.com/meeraray/wallpaper-changer Sep 2018 - January 2020
Created and deployed a Python desktop application to change the wallpaper at sunset and sunrise, which varies based on time of year and location. Integrated multiple libraries with Windows system, troubleshooted, and created user-friendly GUI and installer application.

2D Obstacle Game, https://github.com/meeraray/apcs-project May 2019 - June 2019
Along with one other teammate, created a 2D obstacle video game in Java for my AP Computer Science class. Designed the game, pitched idea and planned, and learned the Java Lightweight Game Library. Far surpassed the requirements of the academic project.

Node Graph Maker, https://github.com/meeraray/node-graphs July 2019 – Aug 2019
Created a GUI with HTML/CSS and JavaScript to make and edit a graph of interconnected nodes. Visualization to show depth-first shortest path algorithm between two points.

EXPERIENCE/LEADERSHIP ACTIVITIES

Summer Researcher – Northwestern University Jun – Aug 2022

- **8-week Research Fellowship**. Participated in Quantitative Biology Research Experience for Undergraduates, an NSF-funded program at Northwestern University's NSF-Simons Center for Quantitative Biology. Mentored by Dr. Auffinger, I investigated the role of noise and signal in UMAP, a dimension reduction algorithm commonly used in single-cell RNA visualizations. I presented my results in a symposium attended by faculty and graduate students.

Web Developer – Research Project at CMU Mar – May 2022

- **Created a website** for CMU's Human-Computer Interaction Institute. Part of project team at CMU and UT Austin examining the impact of AI on COVID essential workers. I developed an HTML/CSS and JS front-end and Python Flask backend, as well as thorough documentation.

Summer Intern - Undergraduate Research Apprenticeship at CMU May – July 2021

- **Data Visualization & Statistical Tests**. Under the mentorship of a statistics professor at my university, I worked with my teammates to examine the impact of sanctions on various countries through data visualizations using Tidyverse and GGPlot in R.

Head of Student Affinity Group at CMU August 2020 – ongoing

- **Organized and led** group meetings, solved community problems

Summer Intern *DeAnza College, Computer Science Dept.* Summer 2018

- **Created Resources on "Artificial Intelligence for Lawmakers":** Worked with De Anza University Professor.

Web & Software Development Summer Camp *Zenith Prep. Academy,* Summer 2016

- **Gained real-world development skills:** Created a professional-quality website with HTML, CSS, JavaScript, PHP, and SQL

VOLUNTEER EXPERIENCE/ADDITIONAL ACTIVITIES

Students Using Data Science for Social Good 2019
Worked with CMU staff in the CREATE Lab to create a data visualization tool to represent the effect of mass incarceration on American society, with the goal of advocating justice reform. Used web scraping tools and Python libraries to extract and analyze data.

Volunteer Teacher, Google CS First – Boys & Girls Club of Silicon Valley 2015 - 2017
Helped teach kids in a lower-income neighborhood the basics of computer science, including drafting and presenting supplementary instruction and helping with debugging (Guru Position)