

Rafay Khan

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EXPERIENCE

Princeton Emma Bloomberg Center for Access and Opportunity

Princeton, NJ

Software Developer

June 2022 - Present

- Spearheaded an end-to-end Python project responsible for connecting 1000+ students to mentors, reducing an 8-hour task to 5 seconds
- Developed a Python ranked-choice-voting project responsible for placing 300+ students in campus events with 98% satisfaction rate
- Constructed several PANDAS datapielines to handle inconsistent spreadsheet data, establishing code consistency across codebase
- Configured Ruff linting and Black formatting across project codebases, increasing refactoring and unit testing capabilities
- Standardized JSON project logging across codebase, generating 24/7 application usage and uptime reports
- Utilized PANDAS, Matplotlib, Numpy, and APIs to perform visual and sentiment analysis on student feedback data

QuantCap

Cambridge, MA

Software & Machine Learning Intern

December 2022 - January 2023

- Constructed Jupyter Notebook API ingestion datapielines, producing technical analysis indicators for over 3.5GB of historical market data
- Consumed several APIs for live market data, utilizing SQL for data storage for downstream technical analysis
- Performed model optimization, tuning hyperparameters on several market regression and classification models
- Generated data visualizations and performed sentiment analysis, extracting features for several market prediction models
- Documented the team project and enforced modular programming principles across the team's codebase

Princeton Department of Computer Science

Princeton, NJ

Teaching Assistant, Algorithms and Data Structures

February 2023 - May 2023

- Taught 50 students Advanced Java OOP implementation techniques and paradigms
- Supplemented core curriculum with software engineering principles of modularity, encapsulation, abstraction

Princeton Center for Digital Humanities

Princeton, NJ

Course Assistant, Python Data Analysis

June 2022 - August 2022

- Mentored 15 students in fundamental computer science constructs and ML algorithm paradigms
- Taught students PANDAS data scraping, cleaning, and analysis conventions
- Assisted students in their construction of social media web scraping projects

EDUCATION

Princeton University

Princeton, NJ

Bachelor of Science in Engineering, Computer Science, GPA: 3.8

September 2021 - May 2025

Relevant Courses: Algorithms and Data Structures, Probability and Stochastic Systems, Linear Algebra, Discrete Math, Advanced Programming Techniques, Programming Systems, Machine Learning, Data Science

PROJECTS

Marshmallow | Automates managerial/administrative tasks across Department Communication Platforms

Python

- Developed a regular expression based name-matching algorithm, resulting in a 95% match rate
- Generates formatted match reports, identifying missing students from the program, thereby increasing program outreach
- Dockerized project, increasing project portability and deployment

Stopwatch Calendar | Tracks and logs stopwatch sessions to Google Calendar

Python

- Abided by an object-oriented design paradigm, maintaining several encapsulated abstract datatypes
- Maintains a module for handling SQL database interactions
- Maintains a module for Google Calendar API interactions, querying user on whether to log study session

Image Classifier | Implements a Multi-Layer Perceptron for classifying handwritten digits

Java

- Developed a modular, encapsulated Perceptron abstract datatype
- Trained Perceptron ADT instances for use in multi-classification neural layer
- Implemented feature extraction for several MNIST image datasets

File Tree | Implements a Directory-File Tree Abstract Object

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- Validated internal state of the AO, checking invariants upon calls to tree operations
- Developed Node ADTs representing Files and Directories, increasing program modularity
- Maintains dynamic memory management with garbage collection mechanism

SKILLS

- **Languages:** Python, Go, Java, C/C++, R, JavaScript/TypeScript, HTML/CSS, ARM Assembly
- **Frameworks:** React, Redux, Django, Django Rest Framework, Flask, Vue, Tailwind CSS, Bootstrap, Qt, Google Cloud, Google App Engine
- **Tools:** PANDAS, NumPy, TensorFlow, SciKit-Learn, Matplotlib, Seaborn, Anaconda, Jupyter, Google Colab
- **Other Technologies:** SQL, MongoDB, Docker, Redis, Git, Bash, Unix, Linux, Node, Office Suite, Google Suite