Rafay Khan

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EXPERIENCE

LambentData   Princeton, NJ

Software Engineer Intern   *June 2024 - Present*

- Developed JSON schemas to optimize and systematize API responses, increasing portability for downstream software
- Utilized Gemini API to further develop resource chatbot, facilitating greater client navigation and engagement
- Contributed to communications infrastructure development to implement and streamline user messaging
- Proposed an implementation and redesign of user notification system, reducing unneeded API reliance

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 datapipelines 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 datapipelines, 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

EDUCATION

Princeton University   Princeton, NJ

Bachelor of Science in Engineering, Computer Science, GPA: 3.8   *September 2021 - May 2025*

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

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
- Generated 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
- Maintained a module for handling SQL database interactions
- Maintained 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*   C

- Validated internal state of the AO, checking invariants upon calls to tree operations
- Developed Node ADTs representing Files and Directories, increasing program modularity
- Maintained 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, Flask, Vue, Tailwind CSS, Bootstrap, Qt, Google Cloud, Google App Engine, Node.js, REST APIs
- **Tools**: Pytorch, Tensorflow, SciKit-Learn, PANDAS, NumPy, Matplotlib, Seaborn, Anaconda, Jupyter Noteboooks/Google Colab
- **Other Technologies**: SQL, NoSQL, MongoDB, Docker, Kubernetes, Redis, Git, Bash, Unix, Linux, AWS, Azure, Microsoft Office, Google Suite