Danial Khan

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Experience

Princeton Emma Bloomberg Center for Access and Opportunity — Princeton, NJ

Software Developer & Community Ambassador — *June 2022 - Present*

- Developed an automation project responsible for helping match 600+ students to mentors, reducing an 8-hour task to 5 seconds
- Constructed several datapipelines to handle inconsistent spreadsheet data, streamlining code consistency across the project
- Modularized entire codebase, paving path for extensive refactoring and optimal usage of testing framework
- Implemented project logging, allowing for systematic debugging and information reports

QuantCap — Cambridge, MA

Machine Learning Intern — *December 2022 - January 2023*

- Constructed datapipelines using PANDAS, producing technical analysis indicators for over 3.5GB of historical market data
- Consumed APIs for live market data, collecting with Python and SQL for downstream technical and sentiment analysis
- Generated data visualizations and performed analysis, extracting features for several market prediction models
- Performed model optimization, tuning hyperparameters on several market regression and classification models
- Developed documentation and enforced modular programming principles across codebase

Princeton Department of Computer Science — Princeton, NJ

Teaching Assistant, Algorithms and Data Structures — *February 2023 - May 2023*

- Taught $\sim$ 45 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*

- Educated $\sim$ 15 students about fundamental computer science constructs and ML algorithm paradigms
- Taught students data scraping, cleaning, and analysis conventions using PANDAS
- Assisted students in their construction of Twitter 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, Machine Learning, Advanced Programming Techniques, Linear Algebra, Discrete Math, Programming Systems

Projects

Marshmallow | *Automates managerial/administrative tasks across Emma Bloomberg Center Discords* — 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

PomoCal | *Generates a Study Sequence and Logs to Google Calendar* — Python

- Developed a RESTful Internal API for communication with frontend
- Developed a personal mode that logs a study sequence tailored to user's study habits
- Utilized the Google Calendar API to query 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
- Maintains dynamic memory management with garbage collection mechanism

Skills

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