# Tuneer Roy

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## EDUCATION

**University of Pennsylvania**, School of Engineering & Applied Science – Philadelphia, PA May 2025
*Intended M.S.E in Computer Science, B.S.E. in Computer Science* • GPA: 4.0/4.0

## TECHNICAL SKILLS

C++, Java, Python (Flask, Django, Pandas, NumPy, FastAPI, Matplotlib, PyTorch), JavaScript (TypeScript, React, Express), Git, Haskell, C, REST, Kubernetes, Docker, SQL, MongoDB, Redis, AWS (EC2, S3, ELB), Apache Spark

## RELEVANT EXPERIENCE

**Penn Labs** | Team Lead, Backend Developer | Philadelphia, PA February 2022 – Present

- Lead teams of Penn Mobile and upcoming product Portal for 10k+ active student users
- Developing Django REST backend and data architecture while regularly collaborating with iOS/Android teams
- Spearheaded notification system to enable other products to send alerts to app (with optional delays using Celery)
- Increased API request speed by 50% through Redis caching; increased testing code coverage up to 90%

**Martian** | Software Engineering Intern | Virtual October 2022 – Present

- Optimized user interface resulting in 30% faster performance; added full-stack features using React & Express
- Planned and executed LTI integration of platform to fully integrate Martian's products with other EdTech tools

**University of Pennsylvania** | Teaching Assistant | Philadelphia, PA September 2022 – December 2022

- Held weekly office hours, answered online questions, graded assignments, and proctored exams for 130+ students course CIS 2620: proof-based course exploring automata theory, undecidability, NP-completeness, etc.

**University of Pennsylvania** | Research Assistant | Philadelphia, PA May 2022 – August 2022

- Analyzed and compartmentalized data from the Ethereum blockchain using SQL queries and Python scripts
- Developed dashboard using TypeScript, React, Express, and MongoDB to automate fuzzing programs on new smart contracts on the Ethereum blockchain, resulting in 75% reduction in analysis time for research team

## PROJECTS

**GPT Code Critic** | *Docker, Kubernetes, GitHub Actions* April 2023 – May 2023

- Deployed Docker and Kubernetes-based application that uses GPT-3 to analyze code
- Published action on GitHub marketplace for effortless integration to other repositories

**PennOS** | *C, Linux, Operating Systems, File Systems* February 2023 – April 2023

- Implemented priority scheduler for UNIX-like operating system using ucontext library in C
- Supports foreground & background processes, stdin & stdout redirections, signal handling, and more
- Developed robust file system based on FAT16 that facilitates file creation, modification, and removal

**Forecasting Stock Prices** | *Python, Machine Learning* February 2023 – April 2023

- Combined ARIMA and Transformer architectures to create ensemble model to predict future stock prices
- Outperformed other Kaggle submissions with mean square error of $15.66 per stock with prices in the thousands

**Book Nexus** | *React, Express, MySQL, MongoDB, GitHub Actions* February 2023 – April 2023

- Wrote complex SQL queries to generate book & author recommendations based on users' favorites & preferences
- Created streamlined CI/CD pipeline that automatically deploys app whenever repository is updated

**Esoteric Language Compiler** | *Haskell, ARM Assembly* November 2022 – December 2022

- Invented generic abstract language syntax to be compiled directly into ARM assembly
- Built parsers for two separate esoteric languages to be translated into internal representation of logic
- Ensured correctness by writing corresponding interpreters and using property-based testing with QuickCheck

**Minesweeper** | *C++* October 2022

- Created version of popular 1989 puzzle game with additional functionality of saving & loading previous games