Mitchell Gray

meg346@cornell.edu MitchellEGray MitchellGray100

Education

Cornell University, Ithaca, NY **Aug 2020 – May 2024**

Bachelor's of Science, Computer Science *30 Graduate Credits*

Minor, Operations Research Information Engineering *Deans List: Fall 2022, Fall 2023*

Relevant Coursework: Applied High-Performance and Parallel Computing · Distributed Computing · Cloud Computing · Systems Programming · Info Networks · Databases · Operating Systems · Software Testing · AI

Technical Skills

Languages: Java · C++ · Python · SQL · Bash · C

Software & Tools: CosmosDB · Neo4j · Azure Functions · Azure · Google Cloud · AWS · Kafka · Git · Protobuf · CI/CD · Docker · Kubernetes · Tableau · Qlik · pandas · NumPy · JavaFX · PyQT · Mockito · JUnit · Poetry · Maven · CMake

Relevant Work Experience

Gecko Robotics **May 2023 – Aug 2023**

Software Engineer Intern | **C++, Python, CMake, C, Google Cloud, CI/CD** *Pittsburgh, PA*

- Worked on Robot Controls team · Revamped Robot & Data Acquisition emulators · Implemented new communications protocol · Wrote code for an asynchronous distributed system · Client/Server TCP networking · Replaced Visual Studio build-system with **CMake** · Added emulator support for calibratable data · Integrated **Github Actions** and **Poetry**.

CMU-Software Engineering Institute **May 2022 – May 2023**

DevOps Engineer Intern | **Python, Bash, Neo4j, Docker, Kubernetes, CI/CD** *Pittsburgh, PA*

- NDA · Updated and created **Gitlab CI** pipelines · Developed **Python** and **Bash** scripts · Created **REST API** data visualizations using **Qlik** · Used **ArgoCD** to deploy **AWS EKS** cluster · Improved efficiency of the company by using **Python**, **Neo4j**, **NeoDash**, and the PageRank algorithm to create useful metrics / long-term documentation · Wrote 30+ page whitepaper using LaTeX · Worked in an agile development environment.

Cornell University **Aug 2022 – Present**

Teaching Assistant & Head Proctor | **Java, Python, SQL** *Ithaca, NY*

- Spring 2024 & Spring 2023, Object Oriented Programming · Fall 2023, Databases · Fall 2022, Intro Physics Lab
- Received the Course Staff Exceptional Service Award and was nominated twice · Created and led review sessions for hundreds of students · Designated as the exam proctoring head · Taught class sections and held office hours weekly.

Research

ADOPT: Adaptively Optimizing Attribute Orders | ***Java, AWS*** | *Github* | *VLDB* **Jan 2022 – Present**

- Paper accepted and presented at **VLDB 2023** · Currently working on transforming the query engine into a **distributed query engine** · Created dynamic data visualizations for the ADOPT query engine using **Java**, JavaFX, and GraphStream · Visualized the engine's reinforcement learning and worst-case optimal join algorithms.

Projects

Distributed Testing Platform (SPEED) | Masters Project | ***Java, JUnit, Cloud*** | ***Github*** **Aug 2023 – May 2024**

- My team and I created a Scalable Platform for Efficient Execution of Distributed testing. The fault-tolerant system contains a controller node that orchestrates worker nodes that run **JUnit** tests on **Java** code. The worker nodes report their findings to the controller. Once all tests are ran, test results are shown in the frontend to the user.

DS-Labs Sharded Key Value Store | Distributed Computing | ***Java, Paxos, 2PC*** | *Github* **Jan 2023 – May 2023**

- Using the DS-Lab framework, my partner and I were able to create a sharded transactional key-value store that uses **Paxos** for replication and **2PC** for multi-key updates. We implemented an Exactly-once RPC protocol on top of an asynchronous network, a primary-backup protocol, Paxos implemented with the PMMC protocol, and 2PC.

Cornell Meetup | Cloud Computing | ***Azure, CosmosDB, Python, WebDev*** | *Github* | *BOOM* **Aug 2022 – Dec 2022**

- 1 of 32 projects selected for BOOM 2023. My partner and I created a social media web app that allows users to create groups, chat with friends, and see where their friends are when on campus. Accounts details were obfuscated and salted.

Organizations

Engineering Entertainment Design Club | *Lead Programmer & Secretary* | *Club* **Aug 2022 – Present**

- Working on a cornhole robot in Python and Arduino · Created a robot that makes cocktails · Worked on our website using HTML, CSS, JS, and Bootstrap · Managed projects and mentored all software teams, comprising of 20+ members.

Cornell Tradition Fellowship | *Fellow* | *Fellowship* **Aug 2020 – Present**

- Contains $< 4\%$ of all students · Keep good grades · Work and volunteer during the school year · Do 100+ hours of each.