

EDUCATION

Carnegie Mellon University

Pittsburgh, PA

Bachelor of Science in Computer Science; Minor in Game Design; GPA: 3.80

Sep 2019 – May 2023

- **Coursework:** Discrete Math, Linear Algebra, 3D Calculus, Probability in Computing, Computer Systems, Parallel Computer Architecture and Programming, Parallel Data Structures and Algorithms, Imperative Programming, Functional Programming, Computer Vision, Computer Graphics, Theoretical Computer Science

EXPERIENCE

Amazon Web Services

Seattle, WA

Software Developer Engineer Intern

May 2021 - Aug 2021

- Worked on computer vision services as part of the AWS Rekognition team. Used IoT and AI/ML-related AWS services such as **Greengrass**, **SageMaker**, and **SiteWise**, coding in **Python**. Performed inferences on images to detect anomalies in products.
- Created API service to validate license credentials and return encryption keys for the purpose of encrypting ML models using **Java**. Used AWS services such as **API Gateway**, **Lambda**, and **DynamoDB**, and created AWS stacks using **CloudFormation**.

Human-Computer Interaction Institute at Carnegie Mellon University

Pittsburgh, PA

Research Assistant

Sep 2020 - May 2021

- Designed and implemented a teacher front-end web dashboard using **HTML**, **CSS**, and **Javascript (Vue.js)** which displayed aggregate dynamic student information such as problems completed, idleness, student struggle, and problem mastery. Used JSON data from an intelligent math tutoring system.
- Built asynchronous detectors for full-stack web application using web workers and message passing in **Javascript**. Implemented algorithms which detected idleness, struggle, and system misuse as part of intelligent tutoring software.

Carnegie Mellon University

Pittsburgh, PA

Teacher Assistant (15-213: Introduction to Computer Systems)

Jan 2021 - May 2021

- Taught introductory computer systems to both undergraduate and graduate students in weekly recitations. Topics include **C** programming, assembly, caches, dynamic allocation, processes, signal handling, and threads.
- Guided students in debugging programming assignments during weekly office hours. Served as a personal contact point for 15 students to give immediate help regarding course content, and gave feedback on code style.

PROJECTS

- **Parallel Graph Coloring:** Implemented heuristic parallel graph coloring algorithms, specifically greedy graph coloring, Jones-Plassman coloring, and Gebremedhin-Manne coloring. Each algorithm was implemented in **OpenMP** and **CUDA** in **C++**. The runtimes, performance, and speedup on various cores for the different algorithms was measured and analyzed. Also used performance measuring tools such as **perf** and **gprof**.
- **Object Tracker:** Built an object tracker in **Python** using **NumPy** and **SciPy** libraries according to the Lucas-Kanade and Matthews-Baker algorithms for image tracking.
- **Ray Tracing:** Built Monte Carlo ray tracing rendering for preexisting modeling software in **C++**. Created bounding volume hierarchy for faster ray hit detection and implemented materials of glass and mirror. Also added Russian Roulette for ray termination to prevent long render time.
- **Caching Web Proxy:** Implemented web proxy in **C** which accepts incoming connections, reads and parses requests, forwards requests to web servers, and forwards responses to clients. Utilized multi-threading to deal with concurrent client requests. Added main memory cache of recently accessed web content for faster response time.

TECHNICAL SKILLS

Languages

C, C++, Java, Python, SML, Assembly, LaTeX

Web Development

HTML, CSS, Javascript, Vue.js, React.js, Jekyll, SASS

Libraries/Frameworks

CUDA, OpenMP, OpenMPI, NumPy, SciPy, OpenCV

Developer Tools

git, GitHub, Docker