PEYTON OKUBO

okubo012@umn.edu • (612) 860-9250 • Minneapolis, MN

SKILLS

- Code: Python, C, C++, OCaml, Javascript, NodeJS, ExpressJS, HTML, CSS, Java
- Tools: Git, Docker, SQL, Shell, Unix, Nix

EXPERIENCE

Undergraduate Research Assistant, University of Minnesota — Jun 2022 — Present

Primarily worked on benchmarking and optimizing DNA synthesis simulation

- Learned and discussed codebase with teammate
- Mentored peer researchers on multiprocess development and best practices
- Developed and documented a benchmarking program to analyze our software's performance
- Formatted, analyzed, and presented benchmarking data to communicate results
- Assisted authoring and revising research paper to publish findings

Technologies: Python, Numpy, Pandas, Shell, Gephi, C++

Teacher's Assistant, University of Minnesota — Aug 2021 — Dec 2021

- Supervised labs of up to 30 students, including working through examples and answering questions
- Held office hours with students to teach topics and answer questions
- Discussed issues with course staff to improve the course experience for students
- Developed grading scripts to make grading more efficient and to provide feedback to students

Technologies: OCaml, Opam, Google Apps Script, Python, PyGithub

EDUCATION

University of Minnesota Twin Cities, Computer Science, Bachelors of Science — 2019 — 2022

- *College of Science and Engineering*
- GPA: 3.725

PUBLICATIONS

- Manicka, Ajay, Andrew Stephan, Sriram Chari, Gemma Mendonsa, et al. "Automated Routing of Droplets for DNA Storage on a Digital Microfluidics Platform." Lab on a Chip, no. v3, Royal Society of Chemistry, Dec. 2022, p. 15, doi:arXiv:2211.15494

PROJECTS

Vi To-Do — Dec 2022

A to-do list web app with Vi motions and a binary space partitioned layout

- Utilized ExpressJS framework for routing and communicating with MySQL database
- Learned advanced CSS layout techniques to update the Fibonacci layout dynamically
- Used Pug to create reusable and modular HTML templates

Technologies: Javascript, ExpressJS, Pug

TCP Socket Server — Nov 2021

A TCP Socket Server using thread pooling

- Incorporated multithreading with thread pooling to support concurrent connections
- Developed serializer and de-serializer to parse sent and received data

Technologies: C, Make

Turi — May 2022

A self-driving line following robot

- Implemented proportional control to optimize the line following path

Technologies: Mbed, C++

Personal Website — Nov 2022

A proof of concept personal website with a Python backend

- Incorporated multithreading with thread pooling to support concurrent connections
- Implemented routing and HTTP authentication for website functionality

Technologies: Python, Javascript, HTML, CSS, Nix

CONTRIBUTIONS

Flavours, Configurable Sources — Sep 2022

Flavours is a Base16 color scheme manager for popular Unix applications

- Implemented most requested feature
- Implemented support for declarative color scheme and template configuration
- Followed conventional declarative configuration philosophies and practices

Technologies: Rust, TOML, Cargo, Nix