Ryan Lam

r45lam@uwaterloo.ca || linkedin.com/in/ryanlam285 || github.com/ryan-lam || ryanlam.ca

Education

University of Waterloo **September 2020 – April 2025**
Bachelor of Science; Honours Physics & Computing Minor *Waterloo, Ontario*

Technical Skills

Programming Languages: Python, JavaScript, TypeScript, HTML, CSS, C, Racket
Frameworks: Node.js, Express.js, React.js, Jest.js, Cypress, Django, Flask, FastAPI
Databases: SQL, NoSQL, SQLite, PostgreSQL, SQLAlchemy, Prisma, Cloud Firestore, Cloud Storage
Tools: Git, Bash, Linux, Docker, Postman, GraphQL, Terraform, Kubernetes, Prometheus, Grafana, Jupyter Notebook, AWS

Experience

Midnight Sun Solar Car Design Team **September 2022 – Present**
Software Lead, Strategy Team *Waterloo, Ontario*

- Currently leading the development of a real-time communication service between the solar car and multiple asynchronous microservices for the purpose of **containerized development** and reduction of system integration issues
- Researched algorithmic methods to estimate the state-of-charge of the solar car's battery pack in real-time
- Developed an algorithm using **Python, NumPy, Pandas, MySQL, PyPROJ, and GeographicLib** that interpolated WGS-84 coordinates and determined the distance, bearing, and relative turning direction of the interpolated coordinates, resulting in the reduction of manual data collection by 80%

Autonomic **January 2023 – April 2023**
Software Engineer Intern, DevOps Team *Palo Alto, California*

- Helped develop an internal **FastAPI** using Python with daemon processes to analyze over 200k Git commits across 7 GitHub repositories and utilized **multi-threading** to reduce compute time by 80%
- Used **Python, Pydantic, Tekton, and GitHub Actions** to build a custom pipeline configuration linter that ran upon Tekton TaskRuns to validate custom CI/CD pipelines that were created by other teams
- Migrated pre-existing pipelines from Concourse CI to Tekton to reduce CI workflow runtimes by 25% via task parallelism
- Used **Flask, Prometheus, and Grafana** to develop an internal log aggregator and dashboard to process over 10k logs

Epoch **September 2022 – December 2022**
Software Engineer Intern *San Francisco, California*

- Implemented a workflow using **GraphQL, SQLAlchemy, Flask, and React.js** to allow users to modify and manage scheduled Slack and Google Calendar notifications within the web app
- Tracked user engagement and reduced table query sizes using **SQLAlchemy and PostgreSQL**, resulting in the additional collection of user engagement data while reducing query execution time by 70%
- Wrote permission handlers in the backend to disable app functionalities based on the user's permissions

JamLabs Data Science **January 2022 – April 2022**
Software Test Engineer Intern *Toronto, Ontario*

- Increased test coverage from 5% to 50% by implementing end-to-end test suites using **Cypress and React.js**
- Analyzed and documented over 60 end-to-end tests via stress testing to optimize runtime and to detect test flakiness
- Designed and integrated CI/CD pipelines to create test environments, seed databases, run end-to-end tests, and destroy test environments using **Terraform, Bash, GitHub Actions, and AWS (Lambda, DynamoDB, S3)**

Projects

KIC-8462852 Star FLux Analysis | *Python, NumPy, Matplotlib, SciPy, Scikit-learn* **April 2022**

- Plotted a time series scatter plot of star KIC-8462852's flux and used NumPy to find a polynomial model for the data
- Used SciPy to determine if the dataset was normally distributed and performed a one sample t-test to determine if the flux of star KIC-8462852 was decreasing

ClassAI (PolyHacks 2022 Winner) | *JavaScript, Express.js, Node.js, Vue.js, Tailwind CSS, Firebase* **February 2022**

- Built a classroom platform that allows teachers to upload video lectures and timestamps important sections in the lecture
- Automated a workflow to upload lectures in Firebase's Cloud Storage and to create signed URLs for third-party APIs