Kelvin Koon

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Technical Skills

Languages: C++, C, Python, Go, Java, Bash
Technologies: AWS (CDK), Docker, Bazel, Scons
Coursework: Distributed Systems, Security, Machine Learning, Networking, Control Systems

Experience

Amazon Feb 2022 – Present
Software Development Engineer II (Customer Service Security) *Toronto, CA*

- Spearheaded the control layer for a self-service data lake, automating data ingestion from 3+ weeks to 1 hour
- Extended access infrastructure to process employee status events, eliminating dwell time for 30k+ terminations

Tesla Sep 2021 – Dec 2021
Firmware Engineering Intern (Vehicle Software) *Palo Alto, US*

- Developed software-in-loop (SIL) infrastructure for battery, temperature, and oil pump graceful degradation to provide safety-critical validation of real-time systems with Python and CANape

Netgear Aug 2018 – May 2019
Software Developer Co-op (Aircard) *Richmond, CA*

- Built throughput validation features across various providers and network protocols for the Software Quality team, expediting delivery of the Nighthawk M5 flagship router

Projects

Statsugiri | *Python, TypeScript, AWS (CDK), Docker, Github Actions*

- Leading development of competitive Pokémon data tools, serving a peak of 100k+ visitors **[repo][media]**
- Built a data pipeline to reliably schedule and ingest replay data daily with AWS Lambda, Step Functions, S3, and EventBridge **[post]**
- Developing a serverless back-end to serve metagame analysis data to customers with AWS Lambda, API Gateway, and DynamoDB
- Configured Github Actions workflow to run tests, check formatting, and automate AWS ECR image builds on merged pull requests
- Built a Chrome Extension to streamline batch downloading and exporting of replay URLs **[extension]**

UBC Thunderbots Robotics | *C++, C, Python, Bazel*

- Contributed to software and firmware development for open-source autonomous soccer robotics, winner of 2021 and 2022 RoboCup SSL Div B **[repo][media]**
- Wrote a custom testing framework with Gtest and fff to streamline firmware primitive mocks, achieving 78% coverage in the previously untested module **[commit]**
- Implemented a circular buffer to store recent difference equation values for the motion controller **[commit]**
- Rewrote the control layer firmware abstraction to support grSim's Protobuf format for the virtual RoboCup 2021 competition simulator **[commit]**

Distributed Hash Table | *Go, Docker, Bash, GCP (Compute Engine)*

- Collaborated on a fault-tolerant key-value store featuring three-way replication and consistent hashing
- Streamlined GCP deployment using Docker, gcloud SDK, and Bash scripts for up to 50 nodes

PyVPN | *Python (PyQt)*

- Developed a VPN with threaded sockets using AES-GCM encryption for message confidentiality and integrity
- Implemented key establishment and mutual authentication using Diffie-Hellman and private key cryptography

Education

University of British Columbia Graduated November 2021
Bachelor of Applied Science in Electrical Engineering (Co-op Program)