

Kelvin Koon

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TECHNICAL SKILLS

Languages: C++, C, Python, Go, Java, JavaScript, Bash

Technologies: Node.js, Express, React, MongoDB, Docker

Coursework: Distributed Systems, Cybersecurity, Machine Learning, Networking, Control Systems

EXPERIENCE

Tesla Sep 2021 – Dec 2021
Firmware Engineering Intern (Drive Inverter) Palo Alto, US

- Updated software-in-loop infrastructure to support vehicle limping validation using Python CAN tools

Amazon May 2021 – Jul 2021
Software Development Engineer Intern (AWS Relational Database Service) Remote

- Developed a Java-based microservice to create and delete new database engines for AWS re:Invent
- Implemented a metadata configuration interface, eliminating need for unsafe DML queries
- Automated the full region build pipeline, reducing deployment time from 30+ days to 2 minutes

Huawei Jan 2020 – Aug 2020
Assistant Engineer Intern (Mobile Security R&D Lab) Burnaby, CA

- Built an automation tool to measure and visualize firewall performance using JavaScript and Python
- Designed a testing framework to verify archive engine encryption and decryption using CUnit
- Wrote Bash scripts to automate Strongswan IPsec VPN client/server set-up

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

- Implemented diagnostic features in C and C++ for the 4G/5G router automated firmware testing suite
- Worked extensively with iPerf and Android Debug Bridge to perform throughput validation
- Added REL-11 CA band decoding capabilities by refactoring 3GPP MessageDecoder file parsing

PROJECTS

UBC Thunderbots Robotics | C++, C, Python, Bazel, Github Actions Jun 2018 – Jun 2021

- Contributed to software and firmware development for open-source autonomous soccer robotics
- Wrote a custom firmware testing framework using Gtest to achieve 78% coverage in previously untested codebase
- Implemented a firmware circular buffer to store recent difference equation values for the motion controller
- Rewrote the control layer firmware abstraction to support grSim's Protobuf format for virtual competition

Distributed Hash Table | Go, Docker, Bash, GCP (Compute Engine) Feb 2021 – Apr 2021

- Collaborated on a fault-tolerant and scalable key-value store based on Chord's consistent hashing design
- Implemented three-way replication and keyspace partitioning to mitigate key losses on node failures
- Streamlined GCP Compute Engine deployment using Docker, gcloud SDK, and Bash scripts

PyVPN | Python, PyQt Oct 2020

- 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

babiri.net | React, Node, Express, MongoDB, Python, AWS (EC2), Heroku Jan 2020 – May 2020

- Built a full-stack data visualization app for aggregating competitive Pokémon stats to serve 100,000+ users
- Wrote a Python script to parse team information using BeautifulSoup and PyMongo hosted on AWS EC2

Elevator Simulator | C++ Nov 2019

- Created a multithreaded elevator simulation system to serve user-input floor requests
- Utilized mutexes, datapools, and pipelines to facilitate inter-process communication

EDUCATION

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