MOJAN JAMALZADEH

Fourth Year Engineering Physics Student at The University of British Columbia

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EXPERIENCE

Production Engineer Intern

Shopify May 2021 – August 2021

- Conducted a feasibility study on Sorbet LLVM, a Ruby compiler within the Shopify codebase.
- Developed a build pipeline for automatic nightly builds of the compiler, and streamlined the benchmarking process using bash scripts to decrease overhead for experimentation purposes.
- Improved developers' experience with Sorbet, a type checker for Ruby by developing libraries used across hundreds of repositories within Shopify as well as the open-source community.

Undergraduate Research Assistant

UBC Electircal and Computer Engineering

Jan 2021 – April 2021

- Conducted experiments utilizing UPMEM (a processing-in-memory solution) to accelerate Snappy decompression.
- Decreased decompression runtime by 30 percent by parallelizing sections of the algorithm.

Backend Developer Co-op

Later May 2020 – August 2020

- Designed and built a two-factor authentication system in the Ruby on Rails framework that integrated with the PostgreSQL database. The feature is now available and used by all admin users.
- Modified the authentication flow on the backend and the API to accommodate for JWT authentication across mobile and web clients to improve the security of the app.
- Worked closely with the backend, product and design team to continuously deploy new features and improve the app.

Software Engineering Co-op

Philips Jan 2019 – April 2019

- Developed a module in C to enable communication between traditional devices and the cloud-based system and modified the backend infrastructure to accommodate the signals received using NodeJS and MySQL.
- Designed a database module in JavaScript to poll and transfer alerts from the existing software database to the cloud service and created a table in DynamoDB to store the information for reporting purposes. This module is now being used at senior care centres across North America.

EDUCATION

The University of British Columbia

Bachelor Applied Science Sep 2017 – May 2022

- Engineering Physics, BASc (average 88.1%)
- Undergraduate Research Assistant in the Electrical and Computer Engineering Department
- Teaching Assistant in the Physics Department

TECHNICAL SKILLS

Ruby | Rails | JavaScript | Node JS | Java | C | C++ | Git | Python | SQL | AWS | OpenCV | Docker | Linux | Tensorflow

PROJECTS

Historic Portrait to Modern Photograph CycleGAN Model

- Trained a CycleGAN model to translate historic portraits to modern photographs using Tensorflow, Keras, and Google Colab.
- Implemented the CycleGAN model using two adversarial networks, two generative networks, as well as novel loss equations.
- The model and the report are now accessible on our website.

Adaptive Image Analysis

- Developed a closed-form mathematical model of blood flow within the liver for detecting cancerous tissue in partnership with BC Cancer Agency.
- Translated the mathematical model into a C++ program. The developed model performs 10 times faster than existing regression models and is integrated into the open-source toolkit for medical physics used for image analysis at BC Cancer Agency.

License Plate Detection and Navigation Machine Learning

- Developed an agent using Python to navigate through a simulated course, detect license plates of parked cars, and avoid pedestrians utilizing a state machine with image feed as an input and velocity commands as outputs.
- Created a convolutional neural networks (CNN) using Keras and Tensorflow frameworks and an image processing node using OpenCV to interpret license plates and parking numbers and verify them with a remote server.

Autonomous Robot

- Designed and built an autonomous robot to navigate a course, retrieve and deposit objects at specified locations during a competition against other robots.
- Checkout our website for more details on the design.

Rocket Avionics System Development

- Designed the module to poll data from various sensors and to control the camera within the state machine of the 30K-feet competition rocket.
- The rocket deployed the parachutes and captured the whole flight during the 2019 Spaceport America Cup competition.