INES QIAN

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EXPERIENCE

GPU Optimization Engineer (Capstone Student)

PRE

Sep 2024 – Current Toronto, CA

- Worked on optimizing a GenAI model that simulates shoppers' behaviour on e-commerce sites/apps.
- Implemented GPU optimization techniques, including the development of **custom kernel functions** and **parallelism** strategies. Enhanced processing speed and efficiency by **40x**.

Software Engineering Intern

Red Hat - Openshift Machine Config Operator Team

May 2023 – Aug 2024 Toronto, CA

- Worked on improving the **Openshift Machine Config Operator** that helps with configuring operating system features on OpenShift Container Platform nodes.
- Led the implementation of enhancing the **metrics and status reporting system** of the operator.
  - Designed and implemented a new **sub-controller pod** that serves as the center for collecting **Prometheus metrics** and **machine state** changes through **API calls, eventing, K8s services and routes**.
  - Brought in various new pool health indicators and sub-controller progression reports to improve action and error tracking.
  - Related work will land in **Openshift 4.15 and 4.16 releases**, and will help various customers, and system admins to better monitor their clusters.
- Support the operator's future way to perform machine OS update - configure the OS by **building and deploying Open Container Initiative Images on the cluster**, integrating data from multiple sources.
  - Led the design and implementation of two new **APIs** that provide finer-grained control by allowing a per-pool configuration instead of the old per-cluster configuration. It also requires less manual setup of configuration files resulting in a reduction of human error.
  - Included a graceful **failure recovery plan** for failed builds, which prevents interruption and gives the user a smoother experience.
  - Developed and maintained **the unit test and e2e test suites** for new features brought in.

Undergraduate Research Assistant

Sick Kids & N2B Laboratory at the Krembil Research Institute

Apr 2021 – Apr 2023 Toronto, CA

- Carrying out **parameter tuning and training** on the computational model of a human L5 cortical pyramidal cell, developed by Dr. Scott Rich in 2020, to study the impact of changes in h-channel properties on neuron's dynamics, and their potential contributions to epilepsy and seizure, using **NEURON, and Python**.
- Set up a **Ubuntu Virtual Machine** via **Oracle VM Virtual Box** to provide the Linux system environment for the in-silico experiment.
- Collecting neuron voltage data from in-silico experiments and writing **Python and MATLAB** scripts to perform data analysis.

EDUCATION

Bachelor of Applied Science - Computer Engineering

University of Toronto

Sep. 2020 – Present CGPA:3.74/4.0

SKILLS

C/C++ Python Java Go HTML, CSS, ReactJS SQL k8s Docker Openshift AWS Ubuntu CoreOS RHEL Pytorch Keras TensorFlow Git CI/CD Jira

VOLUNTEER WORK

- University of Toronto Cyber-security Student Association - Content Lead
- Volunteer Engineering Experience Program - Full Stack Developer

PROJECT

- ***UMap (Software Development, GIS)***
  - Developed the **front-end, back-end and unit-testing** of a **GIS system** targeted towards university students.
  - Implemented new **APIs** to access data from a larger than 1 GB database and applied various **STL data structures** for optimization.
  - Used **EZGL library** to design a usable and responsive user interface.
- ***Smiling Machine (Image Generation, Deep Learning)***
  - Developed a **conditional deep convolutional generative adversarial network (cDCGAN)** to generate smiling face images and showcased the result with **Tensorboard**.
  - Generated reports on analyzing **the difficulty in GAN training**, and received a mark of **90** under evaluation

ACHIEVEMENTS

- Dean's Honour List - 2020-2023