

ALLAN WEI

EXPERIENCE

Perepichka Group — *Computational Chemistry*

September 2019

- Performed small molecule DFT and periodic DFT, using Gaussian, Quantum Espresso, and ADF.
- Ran DFT calculations on ComputeCanada clusters using Slurm.
- 3D Modelling and creation of novel compounds using Materials Studios.
- Organized and updated an online lab notebook and Github repository for the documentation of lab procedures.
- Organized, collected, and sorted collections of chemical data, to add to a database to train a graph neural net, for predicting fluorescence and other light-based properties.

McMedHacks 2021 Mentor

August 2021

- Mentored for McMedHacks specifically relating to neural networks in regards to medical imaging.
- Helped teams in several challenges including, medical image pre-processing, integration of GANs, and AlphaTau's seed detection of real clinical data.

C++ Development

April 2021

- Experience developing with C++ and working with BLAS and Eigen in scientific computing contexts.
- Currently creating a custom deep learning library in C++ as a passion project.
- Familiar with C++ workflows with both GCC and MSVC.
- Experience with optimizing and profiling computationally expensive code, e.g Monte Carlo Search Trees used frequently in the AlphaZero model.

Deep Reinforcement Learning

April 2021

- Created a local cluster for distributed computing using Ray and bash scripts to train the reinforcement agents I've created.
- Wrote a custom OpenAI gym environment to simulate the stock market using real data from web scraped from Yahoo Finance.
- Wrote another custom OpenAI gym environment to wrap over the game Hotline Miami 2. I decompiled and reverse engineered the game to find specific pointer paths to data that is inaccessible normally, i.e raw position values.
- Modified an existing implementation of the MuZero algorithm to work on my custom environment, specifically I implemented a multithreading saver that transfers trained model data onto the head node, as the original implementation was not designed to be run on clusters.

EDUCATION

McGill University, Montreal — *B.Sc.*

Expected Graduation in 2023

Blyth Academy, Ottawa — *High School Diploma*

Graduated 2018 followed by a gap year.