

Yuanzheng Hu

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Education

Degree Title

University of Ottawa, Canada, Ottawa

2021-2023

- Master of Computer Science Applied AI concentration

University of Ottawa, Canada, Ottawa

2015-2020

- Honours Bachelor of Science in Computer Science (Data Science Option)
- GPA: 8.33/10

WORK EXPERIENCE

Research Assistant

May 2018 –Aug 2018

University of Ottawa, Canada, Ottawa

Supervisor: Prof. Amiya Nayak

- Using a 72-cores AWS EC2 instance running MCCLA algorithm, using multi-threaded and multi-process techniques to increase the efficiency of algorithm
- Learned to use Numpy and Matplotlib to draw and handle data, make scientific graphs for essays as reference
- Editing essays using Latex and TextMaker.
- Re-implement community detection algorithms in Python, and use their result as references in essay
- Programmed in Maple 2018 to find accurate roots of polynomials using Newton's method and Bisection method

Hardware Automation Engineer

ORBCOMM, Canada, Kanata

Jan 2019 - Apr 2019

- Using Python to automate lab equipment, such as, multi-meter, power meter, power supply, function generator, temperature chamber.
- Refactoring desktop GUI that record function generator data using IronPython, added memory control makes it graph more data, stored in binary format. Integrate multi-threaded engine to prevent program from crashing.
- Making scripts using Telnet and SCPI commands to remote control power sockets and spectrum analyzer.
- Coding for multi-threaded test program that controls multiple lab equipment to test battery quality.
- Learned, tested, and assembled WASP devices that sending signals to a mini antenna.
- Reverse engineered power meter signals using Dock-light.

Software Engineer

Microchip Corporation, Canada, Kanata

Sep 2019 – Dec 2019

- Refactoring program in TCL to Python, adding object-oriented functionality. Make it easier to use.
- Using unittesting module in Python to test the program
- Deploying Jenkins to automate testing scripts
- Learnt Agile development, used Agile tools like Jira, Confluence.
- Getting familiar to Precision Time Protocol.

Research Assistant

May 2020 – August 2020

University of Ottawa, Canada, Ottawa

Supervisor: Prof. Tom Uchida

- Developed a Python API helper called OpenSimHelper for OpenSim library, a library for biomechanics software, the OpenSimHelper helps to generate report plots and control signal for skeleton simulation results.
- Worked with graduate student's thesis on the topic of ideal assisted equipment for human body, provide technical support to generate plots and skeleton simulation data via OpenSimHelper.

Machine Learning Engineer Intern

March 2021 – August 2021

Silexon Tech, Beijing, China

- Using GNN to predict the site of the metabolism in small molecular, built GCN, GAT, GraphSAGE models to evaluate on datasets using PyTorch and PyTorch Geometric.
- Reading papers regarding to the GNNs and preprocessing datasets to reimplement the methods used in the papers.
- Pretraining GNN with molecular data using pretrain frameworks from SNAP (Stanford Network Analysis Project), Grover (Tencent AI lab) etc.

Research Projects

Deep Learning algorithm with Diabetes

Supervisor: Prof. Marina Sokolova

- Working with large dataset in Diabetes analysis using Scikit-Learn and Pytorch.
- Applied Machine learning algorithms along with Deep learning algorithms to predict readmission days for patients.
- Two papers to be finished and submitted around February 2021 based on this project
- Non-refereed full articles:
 1. *Explainable Multi-class Classification of Medical Data*
<https://arxiv.org/abs/2012.13796>, Dec 2020

2. *Convolutional Neural Networks in Multi-Class Classification of Medical Data*
<https://arxiv.org/abs/2012.14059>, Dec 2020
3. *Explainable Multi-Class classification of the COVID-19 Mental Health data*
<https://arxiv.org/abs/2105.13430>, March 2021

DDOS recognition with Deep learning

Supervisor: Prof. Miguel Garzon

- Customized LSTM model using Tensorflow to predict DDOS packets.
- Course based research, only report available, no paper published.

School Projects

Data Mining (Python)

- Crime analysis in Vancouver and Denver project using Tableau, Scikit-Learn, Pandas, Postgres.
- Search engine based on VSM, Boolean, Probabilistic model using NLTK, Scikit-Learn.
- House chore
 - Android application that assign family members tasks, and chat.
 - Using Firebase, SQLite
 - Restaurant Rating Website, able to rank, comment, select restaurant.
 - Using PHP, Postgres

Personal Projects

Node Chat

- Chat application implemented in Node JS
- Used Socket.IO, express JS, mustache template engine
- Hosted on Heroku

Node SSH

- Web SSH Client connect to my own server.
- Used Xterm.JS, SSH2
- Hosted on Heroku

Node Cloud Drive

- File upload implemented in Node JS, upload to AWS S3 bucket
- Used AWS-SDK, Multer, Express JS, Materialize CSS, ejs
- Hosted on Heroku

Dreact2

- Personal Blog implemented in Django, React, Django-PageDown(markdown)
- Hosted on my own Server using Nginx
- API available for retrieve blog information

Honours

Dean Honor List:	Winter 2018, Fall 2018, Spring/Summer 2019, Winter
Merit Scholarship:	2020 2018, 2019, 2020

EXTRA-CURRICULAR ACTIVITIES

Clubs: Member of robotic club at University of Ottawa, designed simple Arduino robot.

Hackathon: Attended UOHACK 2018, designed a Funding Android app.