Allan H. Ma

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Summary of Skills

- Project experience in Machine Learning (Deep Neural Network for image classification and generation)
- Proficient with object oriented programming (C++, Python)
- Familiar with parallel computing across cluster nodes and MPI programming in Linux environment
- Familiar with CUDA C programming and GPU performance testing
- Familiar with relational database design and SQL language (PostgreSQL)
- Academic communication skills gained from TA experiences and group research presentations
- Self-motivated and able to work well both independently and as part of a team
- Project experience in application design (MCU and FPGA)
- Strong math and engineering background and bilingual in English and Mandarin

Working Experience

Feb. 2016—Now: GPU Software Researcher at University of Guelph

- Assist in image classification and generation related research activities.
- Develop and maintain large scale framework for deep learning on GPU cluster *copper*.
- Test different parallelism for accelerated deep learning on hardware level.
- Evaluate system bandwidth and benchmark deep learning and reinforcement learning related GPU performance on Intel-based cluster and IBM Power Systems.
- Build, Install or update python stack manually or via Anaconda.
- Build, Install or update popular deep learning software including Theano, TensorFlow, Caffe, Torch and DIGITS on Ubuntu and CentOS with x86_64 and ppc64le architectures.

Jan. 2014—Dec. 2015: Graduate Teaching Assistant at University of Guelph

Courses include *Applied Differential Equation*, *Electric Circuit*, *System & Control Theory*, and *Electrical Devices*. Duties include:

- hold office hours and respond to email queries,
- grade assignments,
- invigilate and grade exams,
- assist instructor with preparing lab materials and organizing lab sessions.

Research and Project Experience

Dec. 2016: Daniel Jiwoong Im, He Ma, Chris Dongjoo Kim, Graham Taylor. Generative Adversarial Parallelization. *arXiv preprint arXiv:1612.04021*, 2016.
Experimented with parallelized training of multiple Generative Adversarial Networks for improved mode coverage and regularization.

May 2016: He Ma, Fei Mao, Graham W. Taylor. Theano-MPI: a Theano based Distributed Training framework. *arXiv preprint arXiv:1605.08325*, 2016.
Implemented distributed deep learning on ImageNet classification aiming to scale up the training of deep learning models based on data parallelism. It utilizes multiple GPUs on a computing cluster to speed up the training performance.

Dec. 2012—Jun. 2013: Software design for oxygen monitoring application
This project aims to build a program for the oxygen monitoring system. The program running on the prototype board (FPGA and MCU) collects oxygen absorption signal and calculates real time oxygen concentration. The prototype includes a large LCD and other human interfaces for signal display, menu control and data recording purposes.

Education Background

Jan. 2014—Feb. 2016: School of Engineering, University of Guelph
Major: Engineering Systems and Computing
Degree: Master of Engineering (Average: 92.7%)
Advisor: Dr. Graham W. Taylor

Sep. 2009—Jun. 2013: School of Precision Instrument and Opto-Electronic Engineering, Tianjin University
Major: Measuring and Control Technology and Instrument
Degree: Bachelor of Engineering (Average: 85.2%)

Award

Oct. 2014: Lana McLaren/Richard Reynolds Memorial Scholarship, University of Guelph

Jun. 2013: Outstanding graduation design (ranking 4 /120), Tianjin University

Aug. 2011: 3rd Prize of Innovation Contest (iCAN-China 2011, Tianjin Area)
Title: Wireless Music Shoes

May 2011: 3rd Prize of Flash Video Contest (SPIOEE, Tianjin University)
Title: Principle of Mathematical Convolution