Haotao Lai (Eric)

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Education

- **Concordia University** — **Montreal**
  Master of Computer Science (thesis-option), GPA 3.57 — *2016–now*
- **Guangzhou University** — **Guangzhou**
  Bachelor of Engineering, GPA 80% — *2012–2016*

Skill

- Familiar with Java, C/C++, Python, know the basics of JS, HTML, CSS.
- Familiar with deep learning development on TensorFlow and Keras, know Pytorch.
- Familiar with Linux basic commands, remote development and deployment.
- Familiar with dependencies management and building tools like Maven for Java and CMake for C/C++.

Award

- Research Bursaries for graduate student (5K CAD) — 2018 fall
- Concordia University Merit Scholarship (5K CAD) — 2018 winter
- Guangzhou University Outstanding Graduation Project Award (2 / 200) — 2016 fall
- Guangzhou University $2^n d$ and $3^r d$ Prize Scholarship (2K CNY, 1K CNY) — 2016, 2015

Research Interests

- Deep learning-based computer vision, my thesis related to object detection and person re-identification
- Compiler and virtual machine. I TAed the course Compiler Design (COMP442/6421) at Concordia University.

Teaching Assistance Experience

I worked as a teaching assistant since 2017 Fall at Concordia University
More information and materials I wrote can be found: *https://laihaotao.me/ta*

- COMP345 Advanced Programming Design with C++ (with Dr. Joey Paquet) — 2017, 2018 fall
- COMP442/6421 Compiler Design (with Dr. Joey Paquet) — 2018, 2019 winter
- SOEN487 Web Services and Applications (with Dr. Serguei Mokhov) — 2018 winter
- SOEN6441 Advanced Programming Practice (with Drs. Joey Paquet, Amin Ranjbar) — 2018 fall, 2019 winter

Selective Projects

OpenISS Framework

Research Project | C/C++ | Deep learning — 2018 fall until now

- Design the framework architecture
- Implement the functionality to support various kind of cameras
  (currently support Kinect v1, v2 and RealSense cameras)
- Implement a cross-language mechanism to allow invoking Python from C/C++ code
- Adapt NiTE2's functionality for skeleton tracking
- Integrate deep learning approach for pedestrian detection

- Integrate deep learning approach for person re-identification
- Implement camera calibration functionality based on OpenCV
- Implement alignment algorithm to map depth image to color image

Deep learning-based person re-identification model

Research Project | Python | Deep learning 2019 winter

- Implement the model based on TensorFlow and Keras
- Implement the generic data pre-processing, data augmentation and mini-batch sampling steps
- Implement two triplet loss functions: batch all and batch hard
- Implement calculation for CMC and mAP metrics
- Script the train process on a remote cluster with 8 GPUs

Deep learning-based person detection model

Research Project | Python | Deep learning 2019 summer

- Implement the model based on TensorFlow and Keras
- Reduce the YOLO object detection model to person detection only
- Implement calculation mAP for object/person detector
- Script the train process on a remote cluster with 8 GPUs

Implementation of a reliable data transfer protocol on top of UDP

Team Project (1^{st} contributor) | Java 2017 fall
GitHub: *https://github.com/laihaotao/COMP6461*

- Implement a http client using TCP
- Implement a http file server using TCP
- Implement a multiplexing event based request handling mechanism
- Implement a reliable layer replaces the TCP used above

Pokemon-Go-Back card game

Team Project (Project leader, 2^{nd} contributor) | Java 2017 summer
GitHub: *https://github.com/laihaotao/COMP354*

- Design the project structure, code manager, bug report and communication procedure
- Implement the select deck mechanism
- Implement the some useful tools for other contributors
- Design the testing process and build the testing framework

Implementation of a compiler

Individual Project (scored 98.4/100) | Java 2016 winter
GitHub: *https://github.com/laihaotao/COMP6421*

- Implement a lexical analyzer
- Implement a syntactic analyzer
- Implement a semantic analyzer
- Implement a code generator

A kind of weeding robot based on computer vision

Individual Project | Java | C/C++ | VB | .Net 2016.03 – 2016.06

- Outstanding graduation project award (rank: 2 / 200)
- Individually developed the whole system contains: Android, VB.net, Halcon, Network communication
- Video link (YouTube) to show the project: *https://www.youtube.com/watch?v=4Qx2GHp2ZlI*

Internet express system

Team Project (team leader, 1^{st} contributor) | Java | C/C++ 2015.01 – 2016.06

- Received 10,000 CNY funding and a patent authorization (CN204576611U)
- Created intelligence-based interactive system (both Android client and Java EE server)
- Implemented communication protocol between android and STM32 which is the control unit

Last updated: July 16, 2019