Allan H. Ma

School of Engineering
University of Guelph

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Technical and Personal skills

- **Programming Languages :** Python, C++
  Familiar with : Shell scripting, Javascript, SQL (Postgre and Spark).
- Familiar with popular deep learning tools: Pytorch, Caffe, Tensorflow, Theano.
- Familiar with parallel computing across cluster nodes and MPI programming in Linux.
- **Industry Software Skills :** Github, Matlab, LabVIEW, Teradata SQL Assistant, MS Office.
- **General Communication Skills:** Academic presentation skills and LaTeX typesetting.

Working Experience

- **ModiFace, a L'Oréal Group Company** — **Toronto, Ontario**
  Senior AI Research Scientist (Full Time) — *Mar. 2018 - Present*
  - Hair Semantic Segmentation: Explore off-the-shelf models, e.g., MobileNet, in Caffe and experimented training on hair segmenation data for realtime mobile application.
  - Skin Diagnosis: Participate in training models for scoring skins of different signs and ethnicities.
  - Makeup Preview Generation: Generate realistic makeup preview, e.g., lipstick, with unsupervisely learned image-to-image translator based on conditional GANs in Pytorch .
- **Marketing Science, RBC Royal Bank** — **Toronto, Ontario**
  Data Analyst Internship (Full Time) — *Sep. 2017 - Feb. 2018*
  - Client Feature Universe: Build client feature universe in Spark SQL on a Hadoop platform for improved offer proposition and campaign strategy design.
  - SAS code and Tech Spec parser : Build a SAS code and word document interpreter for automated and accurate information-of-interest extraction.
  - Offer Automation: Build an offer creation and update system with a form front-end and data set back-end with transform and validation rules written in pyspark.
- **Machine Learning Research Group, University of Guelph** — **Guelph, Ontario**
  GPU Software Researcher (Full Time) — *Feb. 2016 - Aug. 2017*
  - Deep Learning Research : Participate in image classification and generation research. Develop a large scale multi-node multi-GPU deep learning framework on copper .
  - Hardware Benchmark: Test parallelism for accelerated deep learning, evaluate communication bandwidth and GPU performance on Intel-based cluster and IBM Power Systems.
  - Software Maintain : Build Linux software and python stack from source or via Anaconda. Build popular deep learning software for research group, including Theano, TensorFlow, Caffe, Torch, OpenCV and DIGITS on Ubuntu and CentOS with x86_64, ppc64le and arm64 architectures.

Research and Projects

- **GAN evaluation**
  Daniel Jiwoong Im, He Ma, Graham Taylor, Kristin Branson. *Quantitatively Evaluating GANs With Divergences Proposed for Training.* ICLR 2018.

Experimented with evaluating generated sample qualities based on some divergence metrics across different hyper parameter dimensions.

- **Generative adversarial parallelization**
  Daniel Jiwoong Im, He Ma, Chris Dongjoo Kim, Graham Taylor. *Generative Adversarial Parallelization.* arXiv:1612.04021 (2016).

  Experimented with parallelized training of multiple Generative Adversarial Networks for improved mode coverage and regularization.

- **Multi-node Multi-GPU training**
  He Ma, Fei Mao, Graham W. Taylor. *Theano-MPI: a Theano based distributed training framework.* ECPP. Springer, Cham, 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.

- **Software design for oxygen monitoring application**

  Built an oxygen monitoring system which runs on a prototype board (FPGA and MCU) for collecting oxygen absorption signal and calculating real time concentration. The prototype includes LCD display and other human interfaces for signal display, menu control and data recording purposes.

Education

Academic Qualifications

- **University of Guelph** — **Guelph, Canada**
  Master of Engineering, Avg: 92.7% — *Jan. 2014 – Feb. 2016*
  Major: Engineering Systems and Computing
  Advisor: Dr. Graham Taylor

- **Tianjin University** — **Tianjin, China**
  Bachelor of Engineering, Avg: 85.2% — *Sep. 2009 – Jul. 2013*
  Major: Measuring and Control Technology and Instrument

Summer Schools

- **University of Montreal** — **Montreal, Canada**
  Deep Learning, Reinforcement Learning Summer School — *Aug. 2017*

- **NextAI** — **Toronto, Canada**
  Deep Natural Language Processing course by Kyunghyun Cho — *Jul. 2017*

Awards

- **Lana McLaren/Richard Reynolds Memorial Scholarship** — **University of Guelph**, *Oct. 2014*
- **Outstanding graduation design** — **Tianjin University**
  ranking 4 /120 — *Jun. 2013*
- **3rd Prize of Innovation Contest** — **iCAN-China 2011, Tianjin Area**
  Title: Wireless Music Shoes — *Aug. 2011*
- **3rd Prize of Flash Video Contest** — **SPIOEE, Tianjin University**
  Title: Principle of Mathematical Convolution — *May 2011*

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专业及个人能力

- 编程语言: Python, C++
  熟悉: Shell scripting, Javascript, SQL (Postgre and Spark).
- 熟悉现流行的深度学习工具库: Pytorch, Caffe, Tensorflow, Theano.
- 熟悉 Linux 下多节点并行计算及 MPI 编程.
- 熟悉流行的行业及办公软件: Github, Matlab, LabVIEW, Teradata SQL Assistant, MS Office.
- 学术沟通和演讲能力以及 LaTeX 排版.

工作经验

- **ModiFace, a L'Oréal Group Company** 加拿大，多伦多
  资深 *AI* 研究员（全职） *Mar. 2018 - Present*
  - 头发的图像语义分割: 探索已有的精简深度学习模型，如 MobileNet, 在 Caffe 框架下训练在一个头发分割的数据集上，以相比较其他已有模型用于实时智能应用的可能性.
  - 皮肤分析: 参与搭建并训练深度学习模型在一个医疗脸部皮肤数据集上，以用于给人脸皮肤多项指标（如皱纹程度，色斑程度）打分，并且同时预测人种.
  - 化妆预览的生成: 在条件性 CycleGAN 的基础上设计改进深度学习模型，以使其通过无监督学习训练在一个脸部化妆数据集上，并在训练后测试阶段可以生成逼真现实的化妆预览，如给输入脸部图像涂上参考图片类型的口红.
- **营销科学部，加拿大皇家银行** 加拿大，多伦多
  数据分析员（全职） *Sep. 2017 - Feb. 2018*
  - 用户特征库: 在一个基于 Hadoop 的平台上，使用 spark SQL，参与了用户特征库的搭建，该特征库用于机器学习分析和用户市场活动的引擎的驱动.
  - SAS 代码及文档解析器: 基于 regex, 使用 python 独立开发了一个 SAS code 和 word 文档关键信息提取软件以用于日常办公和分析活动，并且移植到上述 Hadoop 平台上运行。.
  - 市场促销创建的自动化: 参与搭建一个运行于上述 Hadoop 平台上的全新的市场活动促销管理系统，该系统包含促销管理员前端输入平台和数据后台.
- **机器学习研究组, 圭尔夫大学** 加拿大，圭尔夫
  GPU 软件研究员（全职） *Feb. 2016 - Aug. 2017*
  - 深度学习研究: 参与了图像分类以及图像生成等方向的研究，并将论文提交相关会议组审议. 在多显卡计算机群copper上开发并维护了一个开源于 github 的并行深度学习系统.
  - 硬件测试: 测试了多种并行深度学习算法. 评估了系统带宽以及深度学习，自适应强化学习系统在两种计算机构架上 (x86_64 和 ppc64le) 的 GPU 性能.
  - 软件维护: 在 x86_64 和 ppc64le 平台上，帮助研究组内学生安装升级与维护系统 python 库或 anaconda python 库. 帮助研究组内学生安装升级与维护当下流行的多种深度学习软件，包括 Tensorflow, Pytorch, Caffe2, DIGITS 等等.

研究项目经验

- **用训练时的发散方程评估 GAN 的图像生成结果**

Daniel Jiwoong Im, He Ma, Graham Taylor, Kristin Branson. *Quantitatively Evaluating GANs With Divergences Proposed for Training*. ICLR 2018.

在三种流行的 GAN 模型上，实验了使用训练时的发散方程评估训练效果，并基于评估结果做了多种与 GAN 相关的最佳参数值搜索和分析.

- **并行 GAN 的图像生成**
  Daniel Jiwoong Im, He Ma, Chris Dongjoo Kim, Graham Taylor. *Generative Adversarial Parallelization*. arXiv:1612.04021 (2016).

  实验了并行交替 GAN 训练的效果并做了分析.

- **多节点多显卡训练**
  He Ma, Fei Mao, Graham W. Taylor. *Theano-MPI: a Theano based distributed training framework*. ECPP. Springer, Cham, 2016.

  使用 python 语言，开发一个基于 Theano 模型的分布式并行训练框架。该框架使用数据并行算法，使用多显卡以达到接近线性训练加速比.

- **基于 TDLAS 测氧样机的嵌入式软件开发**

  参与开发了基于氧气吸收激光光谱特定波长的信号收集，使用 FPGA 调制谐波信号，以计算氧气浓度，并在单片机上实现 LCD 屏显示和用户操作界面的测氧样机 .

学历

高等教育

- **University of Guelph** — 加拿大，圭尔夫
  工程硕士, *Avg: 92.7%* — *Jan. 2014 – Feb. 2016*
  专业：工程系统和计算
  导师: Dr. Graham Taylor

- **天津大学** — 中国，天津
  工程学士, *Avg: 85.2%* — *Sep. 2009 – Jul. 2013*
  专业：测控技术与仪器

暑期班

- **蒙特利尔大学** — 加拿大，蒙特利尔
  Deep Learning, Reinforcement Learning Summer School — *Aug. 2017*

- **NextAI** — 加拿大，多伦多
  Deep Natural Language Processing course by Kyunghyun Cho — *Jul. 2017*

获奖情况

- **Lana McLaren/Richard Reynolds Memorial Scholarship** — 圭尔夫大学, *Oct. 2014*
- **优秀毕业设计** — 天津大学精密仪器与光电子工程学院, *Jun. 2013*
  ranking 4 /120
- **创新大赛三等奖** — **iCAN-China 2011,** 天津地区, *Aug. 2011*
  Title: 无线音乐鞋
- **Flash 设计大赛三等奖** — 天津大学精密仪器与光电子工程学院, *May 2011*
  Title: 数学卷积原理