YILIN (LARRY) LI

 \checkmark (416)-834-8954 $\diamond \blacksquare$ larryli1999@gmail.com $\diamond \heartsuit$ larryli1999.github.io

EDUCATION

University of Waterloo

B.A.Sc. in Mechatronics Engineering with Artificial Intelligence Option Cumulative GPA: 90.86/100, Dean's Honours List

WORK EXPERIENCES

Huawei Canada

Machine Learning Engineer Intern

- · Applied 8-bit QAT on BERT and fine-tune the fully quantized model on the GLUE benchmark
- · Implemented knowledge distillation to stabilize quantization while replacing BERT LayerNorm with NoNorm
- · Experimented structured pruning on BERT FFN during model's pre-training and fine-tuning phases

Synapse Technology

Deep Learning Engineering Intern

- Developed a 3D detector with SSD and used the slice-and-fuse architecture to detect handguns from CT scans
- Trained and evaluated a system of SSDs to detect explosives and assembled IEDs from X-ray images
- · Implemented automated consensus process on 1.5M labelled data to improve data processing efficiency

Primate Labs

Machine Learning Developer Intern

Developed an Android application which implemented image classification, object detection, semantic segmentation, face recognition, style transfer, pose estimation and sentiment analysis using TensorFlow Lite

ESI

Robotics Software Developer Intern

· Developed a control layer interface in C# to communicate between Node is Server and the robot using UDP to implement Gaussian Navigation API

RESEARCH EXPERIENCES

University of Waterloo (Data Systems Group)

Undergraduate Research Assistant

- · Supervised by Prof. Jimmy Lin, researching information retrieval and natural language processing
- · Developed domain adaptive multi-staged information retrieval systems with BM25 and T5 model for TREC 2021 Clinical Trials Track and Heath Misinformation Track
- · Experimented Transformer-based models on MS MARCO ranking tasks with Localized Contrastive Estimation loss

University of Waterloo (Kimia Lab)

Sep - Dec 2018

Undergraduate Research Assistant

- · Supervised by Prof. Hamid Tizhoosh, researching medical image search and keyword extraction
- · Applied keyword extraction with TF-IDF and LDA from Scikit-learn from 1,949 pathology reports
- · Generated over 5,000 patches from 300 pathology images using Openslide Library for DenseNet feature extraction

PUBLICATIONS

- Neural Query Synthesis and Domain-Specific Ranking Templates for Multi-Stage Clinical Trial Matching (SIGIR 2022 Short) Pradeep, R., Li, Y., Wang Y., Lin, J.
- Squeezing Water from a Stone: A Bag of Tricks for Further Improving Cross-encoder Effectiveness for Reranking (ECIR 2022 Reproducibility)

Pradeep, R., Liu, Y., Zhang, X., Li, Y., Yates, A., Lin, J.

- New Nails for Old Hammers: Anserini and Pyserini at TREC 2021 (TREC 2021 Proceedings) Lin, J., Chen, H., Hu, C., Lin, S., Li, Y., Ma, X., Pradeep, R., Yang, J., Zhang, X.
- · Automatic Classification of Pathology Reports using TF-IDF Features (Arxiv preprint) Kalra, S., Li, L., Tizhoosh, H.R.

Sep - Dec 2020 Montreal, QC

Waterloo, ON

Sep 2017 - Apr 2022

Jan - Apr 2020 Palo Alto, CA

May - Aug 2019 Toronto, ON

Jan - Apr 2018

Markham, ON

Waterloo, ON

May - Dec 2021

Waterloo. ON

PROJECTS

AirMotion Pen (Final Year Capstone Project)

- $\cdot\,$ Designed and developed a GUI with PyQt Library to collect and store gesture data from users
- · Trained and quantized a CNN in Tensorflow with processed gesture data for hand gesture classification
- \cdot Integrated the quantized model in the prototype's driver using Tensorflow Lite C++ API for real-time inference

Brain MRI Image Segmentation

- $\cdot\,$ Applied sub-volume sampling and standardization on 3D brain MRI to reduce input sizes for 3D segmentation
- $\cdot\,$ Fine-tuned the 3D U-Net with soft dice loss to segment the tumor section in the 3D brain MRI

EXTRA-CURRICULUM

University of Waterloo Self-driving Car Team (WATonomous)

Perception Team Core Member

- \cdot Improved inferencing performance of TensorFlow neural networks by CPU and FPGA optimizations
- \cdot Developed a C++ algorithm for ROS nodes which ran the networks and transferred predictions from the networks to the rest of the software pipeline

TECHNICAL SKILLS

Languages	Python, C++, C#, Matlab, R
Technologies/Tools	Deep Learning, NLP, CV, Robotics, Pytorch/Tensorlfow/Keras