Lili Liu

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Objective: Machine Learning Engineer (Full-time)
Start time: March 1th.
Work authorization: Open Work Permit (PR in progress).

Skills

- Python, Java, C/C++, Assembly language, Linux shell script and SQL.
- Data structures, Machine Learnin, Reinforcement Learning and Deep Learning.
- Model Optimization, Vision Foundation Model and Autonomous Driving.
- Tensorflow, Pytorch, Caffe, CPU & GPU & Cloud & Hardware deployment.
- OpenCV, Scikit-learn, Numpy, Pandas, Git and Docker.

Work experience

Machine Learning Engineer Huawei Vancouver Research Center, Canada
Foundation Model Application *Oct. 2023 – Jan. 2024*

- Developed an application for autonomous driving perception data auto-labeling using **vision foundation models** (SAM, SEEM, MaskDINO, etc.), enabling high-accuracy panoptic segmentation, object detection, and large-scale generative data labeling.
- Built an end-to-end ML pipeline for **fine-tuning** and **evaluating** large vision models on **fisheye datasets**, incorporating **multimodal prompts** (bounding boxes, text, points).
- Delivered a production-ready solution to customers with post-training and validation workflows, improving **hard-case detection** performance by **10%** over baseline models.

Machine Learning Engineer Huawei Vancouver Research Center, Canada
Autonomous Driving Model Compression *May. 2022 – Oct. 2023*

- Spearheaded research and implementation of **pruning, quantization, sparsity, and knowledge distillation** techniques for compressing deep learning models on AI chip for autonomous driving.
- Designed and implemented an automated **in-house compression framework** that unified processes across three datasets using seven pruning methods and four process types, enabling 84 configurable compression strategies.
- Achieved up to **90% model size reduction**, achieving faster inference and lower memory consumption with minimal performance degradation.

Associate Machine Learning Engineer Huawei Vancouver Research Center, Canada
Autonomous Driving 3D lidar detection and deployment *May. 2021– May. 2022*

- Conducted applied research on LiDAR-based autonomous driving algorithms, including **3D LiDAR detection** (e.g., PointPillars), **features fusion**, and **model deployment** on chip.
- Integrated **HIVT** and **LaneGCN** with the **CARLA simulator**, developing **customized algorithms** for vehicle detection and spatial reasoning in highway environments.
- Developed a profiling module to identify bottlenecks and low-performance operators in complex LiDAR-based perception models, with automated workflows for PyTorch inference, ONNX export, OM conversion, and profiling on the Ascend AI chip.

Project experience

Independent Machine Learning Engineer Google Kaggle · MedGemma Impact Challenge
Human-centered AI application and edge optimization *Jan. 2026 – Ongoing*

- Built a **human-centered AI application** using **MedGemma**, focusing on efficient deployment for **edge devices**.
- Applied **quantization** and **knowledge distillation** to compress the model to **25% of its original size** with **negligible performance degradation**.
- Analyzed **model size–latency–accuracy trade-offs** and built a **reproducible optimization pipeline** for rapid experimentation and deployment.

Google Hash Code 2021 - Traffic Signaling Online, Canada
Qualification round, First Round and Extended Round, 16th Canadian team *25th Feb. 2021*

- Designed and optimized algorithms for the real-world city traffic problems released by Google Maps.
- Optimized the schedule of traffic lights to minimize the total amount of time spent in traffic, and help as many cars as possible reach their destination before a given deadline.

Education and Research experience

Thesis Master of Computer Science Concordia University, Montreal, Canada
Hand-drawn image analysis *Sep. 2018 – Dec. 2020*

- Created an automatic human personality predict system by incorporating **machine learning** and **image processing** algorithms into hand-drawn sketches for **drawing segmentation** and **features extraction**.
- Increased the average classification accuracy from 91.89% to 94%(Top-1) and 98%(Top-5) by transferring the pre-trained **Inception-V3** trained on ImageNet to the sketches dataset for categories classification [1].
- Created the first intelligent system for drawing-based psychology tests by communicating with technical and non-technical coworkers and designing novel algorithms in need [2].

Master of Computer Technology Beijing University of Technology, Beijing, China
Time series EEG data classification *Sep. 2015 – Jul. 2018.*

- Proposed a novel strategy of signal selection and combination from EEG data. It uses **PCA** to extract the most representative electrodes from the complex multi-channel EEG signals and then decompose the selected channels with **EMD** to improve the classification accuracy [3].
- Proposed to combine the temporal and spatial characteristics of the multi-channel EEG signals to generate spectral images and feed into Deep Neural Network for data augmentation(G) and classification (D and **ELM**).
- Optimized the architecture in the last work by simplifying two elements (Discriminator in GAN and ELM) and modifying the last layer of GAN and the correspondent loss function, leading to an end-to-end **semi-supervised GAN** structure with a high accuracy of 98% [4].

Publication

[1] **Liu, Lili**, Graziella Pettinati, and Ching Y Suen. Computer-aided Wartegg drawing completion test. In *International Conference on Pattern Recognition and Artificial Intelligence*, pages 575–580. Springer, 2020.

[2] Nam Tuan Ly, **Liu, Lili**, Ching Y Suen, and Masaki Nakagawa. Hand-drawn object detection for scoring Wartegg zeichen test. In *International Conference on Pattern Recognition and Artificial Intelligence*, pages 109–114. Springer, 2020.

[3] Lijuan Duan, Song Cui, **Liu, Lili**, and Yuanhua Qiao. A novel eeg signal recognition method using modified optimal electrodes recombination strategy. In *International Conference on Intelligent Science and Big Data Engineering*, pages 601–613. Springer, 2018.

[4] **Liu, Lili**, Lijuan Duan, Ying Xiao, and Yuanhua Qiao. A novel seizure prediction method based on generative features. In *International Conference on Intelligent Science and Big Data Engineering*, pages 672–682. Springer, 2018.