DAYOU MAO

4B Computer Science Student @ University of Waterloo

(519) 729-4955 daniel.mao@uwaterloo.ca
GitHub LinkedIn WebSite

TECHNICAL SKILLS

- Languages/Tools: **Python**, **C++**, **CUDA**, **Java**, SQL | Git, Docker, AWS, Apache Kafka, Kubernetes.
- AI/ML Libraries: **NumPy**, **TensorFlow**, **PyTorch**, scikit-learn, OpenCV, Matplotlib, Caffe, SciPy.

WORK EXPERIENCES

NVIDIA Corporation Jan 2022 – Apr 2022 · 4 mos
Computer Vision Engineer - Autonomous Vehicles *Santa Clara, CA, United States (Remote)*

- Created new **data input pipeline** to define clean datasets for model development and comparison.
- Enabled more **robust training experiments** with more learning rate schedules, sampling mechanisms, and by refactoring model definition.
- **Stabilized the training process** and **reduced training time** from ∼20h to ∼3h to significantly speed up model development.
- **Improved F_1-score** of a traffic light classification model by **∼1%** on **end-to-end KPI** test sets by hyper-parameter searching from 1000+ experiments.
- Debugged memory, latency, and **performance tests** for multiple classifier nodes on different platforms.

MIND Technology, Inc. May 2021 – Aug 2021 · 4 mos
Machine Learning Engineer - Object Detection *The Woodlands, TX, United States (Remote)*

- Generated **synthetic data** of lobster pots, human bodies, and mines for **pretraining** our model.
- Achieved **near 1.0 confidence** on synthetic data after fine-tuning the network topology.
- **Transfer learning** of our RetinaNet model from the COCO 2017 dataset to our domain.
- Deployed the model onto Google Edge TPU with **TensorFlow Lite** and NVIDIA Jetson Nano with **TensorRT** and profiled the usages.

RESEARCH EXPERIENCES

Vision and Image Processing Lab Jan 2023 – Present · 1 mo
Undergraduate Research Assistant *Waterloo, ON, Canada*

- Error analysis by **variance of gradient** to identify **hard training examples**.

University of Waterloo May 2022 – Aug 2022 · 4 mos
Undergraduate Research Assistant *Waterloo, ON, Canada*

- Preprint: Bauschke, Heinz H., Dayou Mao, and Walaa M. Moursi. "How to project onto the intersection of a closed affine subspace and a hyperplane." *arXiv preprint arXiv:2206.11373* (2022).
- Implemented **numerical experiments** to verify the correctness of our results and empirically demonstrated that alternating projection algorithms with the new formula **converge faster**.

PROJECTS

MedTechResolve Student Design Team Mar 2022 - Present · 11 mos

- **Team lead** of the computer vision R&D team on biomedical engineering and HCI related projects.

Computer Vision Code Base Jan 2021 - Present · 2 yrs 1 mo

- Production-level implementation of **data input**, model **training**, and model **evaluation** pipelines for **image classification**, **object detection**, and **semantic segmentation** tasks.
- Collection of papers and notes in ML with a focus on **CNN**, **Transformer**, and **GAN** architectures.

EDUCATION

University of Waterloo, Canada Sep 2019 - Present

- Triple major in **Computer Science**, **Statistics**, and **Optimization** with faculty average 93.46%.