DAYOU MAO

4B Computer Science Student @ University of Waterloo

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

TECHNICAL SKILLS

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

WORK EXPERIENCES

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

- Defined a clear **data exportation workflow** and enabled relevant teams to create clean datasets for model development and comparison between different versions.
- Implemented cyclical learning rate schedules, over/undersampling mechanisms, and refactored code for model definition to enable more robust fine-tuning process.
- Improved the F_1**-score** of a traffic light **classification** model by around **1%** on **end-to-end KPI** test sets by fine-tuning from thousands of training experiments.
- Improved training methodologies and **reduced training time** from around 20h to around 3h.
- Fixed memory, latency, and performance **tests** for multiple classifier nodes on different platforms and generated **reports** for other teams to review.

MIND Technologies Inc May 2021 – August 2021 · 4 mos
Machine Learning Engineer *The Woodlands, TX, United States (Remote)*

- Generated **synthetic data** of lobster pots to **pretrain** the RetinaNet model.
- **Transferred** a RetinaNet **object detection** model from the COCO 2017 dataset to sonar signals of underwater lobster pots.
- Fine-tuned the feature pyramid architecture and achieved **near 1.0 confidence** on synthetic data.
- Deployed the model onto **Google Edge TPU** using TensorFlow Lite and **NVIDIA Jetson Nano** using TensorRT, and profiled the usages.

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

- Proposed and proved a **closed form formula** for **projection** onto intersection of a closed affine subspace and a hyperplane in a Hilbert space.
- Implemented numerical experiments to verify the correctness of our results and empirically showed that **alternating projection methods** using the new formula **converges faster**.
- 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).

PROJECTS

MedTechResolve Student Design Team March 2022 - Present
Software Engineering Team Lead *Waterloo, ON, Canada*

- Leading **computer vision research** on deep learning solutions to **lung cancer segmentation**.
- Leading the **frontend** and **backend** teams for developing a triage server, our official website, and an internal human resource management tool.

Computer Vision Knowledge Base January 2021 - Present

- Developing a code base for computer vision, including common **CNN**, **transformer**, and **GAN** architectures and **classification**, **detection**, and **segmentation** frameworks in TensorFlow.

EDUCATION

University of Waterloo, Canada September 2019 - Present

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