

Andrew Guo

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EDUCATION

University of Toronto

2024 – 2025

Master of Science - Computer Science

- Research stream, directly transitions to PhD
- *Advisors:* Prof. David Lindell, Prof. Kyros Kutulakos
- Focus on deep learning, artificial intelligence, computer vision, neural rendering

University of Waterloo

2019 – 2024

Honours Bachelor of Software Engineering

- Dean's Honour List, Cumulative Avg: 92%, awarded \$44,000 in scholarships
- Completed 40 months of full-time work experience in industry, double the requirement for co-op program

EXPERIENCE

Research Engineering Intern

Sept. 2022 – Apr. 2024

Nvidia

Toronto, ON

- Researched **3D reconstruction**, **neural scene representations**, **LiDAR novel view synthesis**, and **pose estimation**
- Created automated **6D pose** annotation pipeline for data collection in the wild, [conference paper](#) in **IROS 2023**
- *Advisors:* Dr. Stan Birchfield, Dr. Liila Torabi, Dr. Hammad Mazhar

Simulation Software Engineering Intern

May 2022 – Aug. 2022

Nvidia

Toronto, ON

- Designed **synthetic data generation** pipeline for 6D Pose Estimation, **beat benchmarks** in original paper
- Created custom annotator to capture semantic information from simulation to generate ground truth for training
- Sped up data generation by **150%** by asynchronously writing to **s3** bucket with multiprocessing

Machine Learning Intern

Sept. 2021 – Dec. 2021

Nvidia

Santa Clara, CA

- Created features for driver-safety system: developer.nvidia.com/drive/drive-ix
- Optimized 11 **convolutional neural networks** (CNNs) using **TensorRT** to run inference on limited hardware
- Transitioned team's entire **SDK** to new version of Nvidia's DRIVE OS to support integration of new camera

Software Engineering Intern

May 2021 – Aug. 2021

Canoo

Torrance, CA

- Created integrated calibration framework in **C** to update ECU calibration without recompiling main application
- **Saved** company **\$30,000** in annual licensing fees by creating **Python** module to generate .a2l description files

Autonomous Vehicle Software Intern

Jan. 2021 – Apr. 2021

WATonomous

Waterloo, ON

- Created localization pipeline to match camera and **LiDAR** images with *a priori* map to navigate car without GPS
- Achieved **3x** speed up using multi-processing in C++ with **OpenMP** and lane line matching with **KD-trees**
- Utilized Carla for autonomous driving simulations when access to vehicle was not possible

Software Engineering Intern

May 2020 – Aug. 2020

AMD

Toronto, ON

- Automated analysis of memory dumps and sped up debugging by detecting anomalies and key metrics
- Created register save/restore tools that interfaced with low-level drivers for power-saving features on graphics chips

PUBLICATIONS

HANDAL: A Dataset of Real-World Manipulable Object Categories with Pose Annotations, Affordances, and Reconstructions

Andrew Guo, Bowen Wen, Jianhe Yuan, Jonathan Tremblay, Stephen Tyree, Jeffrey Smith, Stan Birchfield

IROS 2023 - [Paper Link](#) - [Project Page](#)