Dhruv Sharma, P.Eng.

226-606-0988 · d32sharm@gmail.com · /in/dhruvsharmauw · d32sharm.github.io · Google Scholar

Skills

- **Core Stack:** Python, C++, CUDA, PyTorch, TensorFlow, OpenCV, ROS/ROS2
- **Domains:** 3D Reconstruction (NeRF, 3DGS), Computer Vision, Autonomous Robotics, Sensor Fusion
- **Leadership:** R&D strategy, team building & mentorship, platform architecture, scaling operations

Technical & Research Experience

Convolve AI *(Edge Vision & Robotics)* — Cambridge, ON · @ConvolveAI
Founder & Engineering Lead Sept 2024 – Present

- Secured municipal and industrial pilot deployments (including Region of Durham) by engineering real-time edge video analytics for security and safety applications. Developed Unitree quadruped perception/navigation stacks.
- Accelerated R&D prototype delivery across vision and robotics workflows by recruiting and mentoring engineering interns.

Huawei Research Canada, Noah's Ark Lab — Toronto, ON
Computer Vision Research Engineer Jun 2022 – Jun 2024

- Benchmarked SOTA NeRF and 3DGS baselines for novel-view synthesis and 3D scene reconstruction to guide simulation dev.
- Achieved **26 FPS** novel-view rendering (**400**× faster than NeRF baselines) and ∼**20%** lower lane-change FID on PandaSet by co-developing *AutoSplat* (ICRA 2025), a constrained 3DGS pipeline decoupling static and dynamic scene geometry.
- Placed **1st on the 2023 CARLA Leaderboard 2.0 map track**. Contributed towards object detection models for the perception stack of the modular *Kyber-E2E* autonomous driving architecture.

University of Toronto — Toronto, ON
Graduate Researcher (M.Sc.) – RVL Lab Sep 2019 – Mar 2021

- Researched end-to-end learning for autonomous vehicle control via data augmentation under Prof. Florian Shkurti
- Reduced human safety interventions from **9 to 1** and lowered cross-track error over a **500+ m** real-world ground robot route using equivariant data augmentations (ICRA 2022).
- Enabled **100+** fourth-year CS students to implement and train deep learning models by delivering weekly tutorials for CSC321.

NVIDIA — Holmdel, NJ & Santa Clara, CA
Autonomous Driving — Software Engineer & ML Intern 2016 – 2019

- **2018–2019 (Full-Time):** Improved end-to-end driving model evaluation across diverse weather and lighting conditions by building scalable training/validation pipelines and simulator features under Dr. Urs Muller and Dr. Beat Flepp.
- **2016–2017 (Intern):** Accelerated augmented driving simulation throughput and real-time vehicle orientation accuracy on DRIVE PX 2 by writing custom CUDA kernels and C++ GPS/IMU Extended Kalman Filter (EKF) fusion.

University of Waterloo — Waterloo, ON
Research Engineer – WISE Lab Jul 2018 – Sep 2018

- Enabled closed-loop physics testing for Waterloo's autonomous vehicle stack by integrating MapleSim vehicle dynamics into Unreal Engine and V-REP simulators.

Additional Leadership Experience

Effizient Inc. *(AI-Enabled Immigration Services)* — Cambridge, ON
Founder & Board Chair (formerly CEO) Feb 2021 – Present

- Cut case-processing overhead by **40%** and served **1,300+** active portal users by architecting app.effizient.ca with automated CRM/ERP workflows and LLM document-review pipelines.
- Scaled the firm to **4,000+** clients and **10+** global staff while eliminating founder operational bottlenecks. Secured Mitacs R&D grants to hire engineering interns, and transitioned daily management to a General Manager.

Education & Licenses

- **University of Toronto** — M.Sc. Computer Science (Autonomous Robotics & AI), *4.0/4.0 GPA, OGS* 2019 – 2021
- **University of Waterloo** — B.A.Sc. Mechatronics Engineering (Honours), *89.78% Avg, Dean's Honours (x3)* 2013 – 2018
- **Professional Engineer (P.Eng.)** — Professional Engineers Ontario (PEO) Oct 2024 – Present

Select Publications

- **ICRA 2025:** *AutoSplat: Constrained Gaussian Splatting for Autonomous Driving Scene Reconstruction* — M. Khan, **D. Sharma**, et al.
- **Preprint 2024:** *Analysis of a Modular Autonomous Driving Architecture: Top Submission to CARLA Leaderboard 2.0* — W. Zhang, **D. Sharma**, et al.
- **ICRA 2022:** *Augmenting Imitation Experience via Equivariant Representations* — **D. Sharma**, A. Kuwajerwala, F. Shkurti
- **IEEE-SSCI 2018:** *Facial Recognition with Encoded Local Projections* — **D. Sharma**, S. Zafar, H. Tizhoosh, M. Babaie