# Abhinav Grover

AI/ML Software Engineer

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## Education

Masters of Applied Sc.
AI & Robotics Engineering
University of Toronto
Graduation September 2021
GPA: 4.0

- AI/ML for Robotics
- State Estimation
- Optimal Control

Bachelors of Applied Sc.
Mechatronics Engineering
University of Waterloo
Graduation April 2019
GPA: 91.5%

- Deep Learning
- Autonomous Robots
- Control Systems

## Awards & Honours

- Vector AI Scholarship
- NSERC Research Scholar
- President's Scholarship
- President's Research Award
- MS Society Research Grant
- First in Class Award (3x)
- Dean's Honours List

## Skills

| | |
|---|---|
| Language | Python, C/C++, Go, Bash, Matlab |
| Libraries | pytorch, huggingface, scikit-learn, pandas, sciPy, opencv2, numpy, fx |
| Tools | Kubernetes, Docker, Nvidia Triton, gRPC, ROS, Nomad, Flyte |
| Soft Skills | Project Mgmt, Team Mgmt, Engineering Sales, |

## Interests

Badminton, Tennis, Cricket, Chess, Sitcoms, Non-fiction

## Relevant Experience

**Senior ML Engineer (Autonomous Driving) - Applied Research** — Mar 2025 - Present
Applied Intuition | Mountain View
Python, Go, PyTorch, OpenCV, Kubernetes, gRPC, Flyte

- Working as part of an elite applied research team that is developing an (L2++) autonomous driving system capable of real-time operation on automotive OEM vehicle hardware.
- Developed a 3D reconstruction cloud pipeline, called Neural Simulation, capable of seamlessly ingesting real-world camera and lidar data to create simulated 3D environments at scale, leveraging technologies like NeRFs and 3D gaussian splatting to enable photorealistic closed-loop simulation capabilities.
- Leveraged Neural Simulation to develop a closed-loop evaluation workflow essential for A/B testing incremental updates in autonomous driving models, and catching early regressions.
- Implemented features like dynamic actor reconstruction, smart gaussian densification, vehicle removal, vehicle harvesting, and photometric evaluation, within Neural Sim product.
- Contributed to gspat open-source project, optimizing rasterization CUDA kernel to half the GPU VRAM usage while maintaining rendering as well as back-propogation performance.
- Conducted sales focused product demos to many current and future customers

**Senior Perception Engineer - Product and Infra** — Sept 2021 - Mar 2025
Ocado/Kindred AI | San Francisco
Python, Go, PyTorch, OpenCV, gRPC, Docker, Nomad

- Implemented critical perception capabilities for state-of-the-art robotic warehouse automation systems, such as Ocado Robotic Pick, optimizing item-range, throughput, reliability, and compute efficiency to enable scalable, high-performance operations.
- Led development of multi-item grasping capabilities that significantly expanded robot pick range and improved end-to-end throughput, enabling efficient fulfillment of diverse products.
- Integrated Mask2Former as the object segmentation model, part of the object grasping capability, reducing grasp failures to by 75%.
- Implemented a centralized triton inference server, reducing system-wide compute and memory usage by 50%, optimizing model sharing and cross-process resource scheduling.
- Developed a robot behavior orchestration layer in Go employing an event-driven concurrency architecture, harnessing the true power channels and go routines.
- Developed drivers for peripheral hardware including cameras, scanners, pumps, and conveyors as modular gRPC microservices.

**Software Engineer (Autonomous Driving) - Internship** — Jan 2018 - Aug 2018
Nvidia | New York
C, C++, Linux, Cuda

- Implemented a data recording Linux application in C++ for a retrofit drive data collection system with automated quality monitoring and frame-drop detection, increasing the system up-time by 2x over its predecessor.
- Implemented features like automated camera calibration and vehicle kinematic modeling, in order to collect vehicle agnostic training data to train an end-to-end lane following model.

**Embedded Systems Engineer (DRIVE Platform) - Internship** — May 2017 - Aug 2017
Nvidia | Seattle
C, Bash, Linux

- Designed and implemented incremental kernel flashing feature for Nvidia's Jetson and DRIVE platform, leading to a 90% reduction in flashing time.

**Software Engineering (Special Projects) - Internship** — May 2016 - Aug 2016
Intellijoint Surgical | Canada
Swift, C#, OpenCV, MacOS

- Developed a prototype MacOS application for surgical tool navigation, using openCV.

## Publications

"Learning to Detect Slip with Barometric Tactile Sensors and a Temporal Convolutional Neural Network" ICRA 2022 (oral presentation).

"Certifiably Optimal Monocular Hand-Eye Calibration", MFI 2020.