Kanav Singla

navsngla@gmail.com | kanav.singla@mail.utoronto.ca | Kanav Singla | +1 (437) 332-3738

EDUCATION

University of Toronto | B.A.Sc. in Engineering Science
Robotics Engineering, Minor: Machine Learning |Spring 2023 (Expected)
Relevant Coursework: Data Structures & Algorithms • Electronics & Mathematics for Robotics •Control Systems •Probability & Statistics •Linear Algebra •Intro to Machine Learning •Deep Learning & Neural Networks (Grad Level)
Publications:
• Fu, A. et al. NoFADE: Analyzing Diminishing Returns on CO2 Investment, **Climate Change AI workshop at NeurIPS 2021**

EXPERIENCE

Noah's Ark Autonomous Driving Lab at Huawei | Machine Learning Research Engineer Intern
June 2021 – Present (Ends Aug 2022) | Markham, Ontario

- Working in a team with senior researchers to **build & ship a learning based planning stack** for Huawei's self driving system.
- Developed a modular and RL-friendly simulation environment **(on top of CARLA)** for training & modular testing of different end to end or traditional autonomy stack based solutions, **significantly improving team's development productivity** .
- Reproduced **SOTA papers** from scratch, orchestrated training runs on **GPU clusters** & extended these models to act as our baselines.
- Effectively contributed to the **research, implementation & patents** for different learning-based solutions developed by the team.

University of Toronto Deep Learning Lab | Machine Learning Summer Research Fellow
May 2020 – August 2020 | Toronto, Ontario
Supervisor: Dr. Chi-Guhn Lee

- Achieved real-time inference at detecting contraband in X-ray baggage scans **deployed in industry**, at the Seoul–Incheon Intl. Airport.
- **Led analysis & testing** of 25+ object detection & classification models in **Pytorch** to maximize the recall for the problem in hand.
- **Effectively managed a team of student researchers** to develop the detection pipeline trained on a customized private data-set & successfully scored funding alongside **ESROP- U of T fellowship award** for the research conducted.

Autonomous Rover Team, UofT | Computer Vision Lead | ART

- Lead the design, development & deployment of the **CV pipelines** for two rovers to compete in the international robotics competition.
- Managed the vision team of 15 senior engineering students in an **Agile development cycle**, for the Intelligent Ground Vehicle Competition.

aUToronto: Self-Driving Car Student Team | Perception Developer | aUToronto

- Worked on the Perception System **(3D Object Detection)** of the vehicle Zeus, with a goal to achieve **level 4 Autonomy** (SAE standard).
- Successfully implemented the **PointPillars model trained on nuScenes** for the perception stack, decreasing the inference time by 40%.
- Won the **SAE AudtoDrive Challenge** 🏆, the team consecutively ranked first for all the 4 years of this North America wide competition.

TECHNICAL PROJECTS

sMart- Student Mentorship App | Summer 2020

- **Started a startup** & worked as the **main developer** on a Mentorship Service Algorithm, to deploy front-end **(HTML/CSS, React)** & back-end **(Django, MySql)** stacks.
- Secured funding, **DMZ's Basecamp Incubator Program** 🏆

Autonomous Electric Vehicle Charging System | Winter 2020

- Built an **autonomous rover** that locates, navigates, & interfaces with the charging port **(top 3** 🏆**)**
- Effectively built and deployed the computer vision system of the rover on a **Raspberry-Pi + Arduino control stack**.

SKILLS

| Languages & Frameworks
Python • HTML/CSS/JavaScript • React • Django • SQL • MATLAB/Simulink • C++

| Techniques
Supervised/Unsupervised Machine Learning • Deep Learning • Reinforcement Learning • OOP

| Libraries
PyTorch • NumPy • Pandas • SciKit Learn • Jupyter • Matplotlib • OpenCV • TensorFlow (Keras) • OpenAi-Gym

| Developer tools
Git • Linux • Docker • Google Cloud Compute • AWS • Vim • ROS • MLFlow • CARLA