Abhinav Grover

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Education

M.A.Sc. - Robotics Eng.
University of Toronto
Robotics Institute
Graduation November 2021
Publication Link
GPA: 3.9/4.0
- State Estimation
- Perception for Robotics
- Optimal Control

B.A.Sc. - Mechatronics Eng.
University of Waterloo
Graduation April 2019
GPA: 91.5%
- Deep Learning
- Autonomous Robots
- Control Systems

Skills

Python	3+ yrs.
C/C++	2+ yrs.
Golang	2+ yrs.
Keras/TF/PyTorch	2+ yrs.
Scikit-learn	2+ yr
Linux Development	2+ yrs.
Docker	2 yrs.
gRPC	2 yrs.
ROS	2 yrs.

Interests

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

Relevant Experience

ML Engineer II | Robotic Grocery Picking   **09/2021 - Present**
Kindred AI, San Francisco
Building a fully autonomous grocery fulfillment robotic system called on-grid robotic pick. [*GoLang, Python, , gRPC, Docker*]

Graduate Research Student | Teaching Assistant   **09/2019 - 08/2021**
STARS lab (Dr. Jonathan Kelly)
University of Toronto
Published a method to detect in-hand object slip using in-expensive tactile sensors for robotic hands, also worked as a teaching assistant for a third year AI course.

ML & Automotive Intern | Autonomous Vehicles   **01/2018 - 08/2018**
Nvidia Inc., New Jersey
Manager: Joyjit Daw (Recommendation on LinkedIn)
Contributed to the data acquisition infrastructure of Nvidia's self-driving software. Projects also included sensor calibration and vehicle controller tuning.

Systems Engineering Intern | DRIVE Platform   **05/2017 - 08/2017**
Nvidia Inc., Seattle
Manager: Arun Gona (Recommendation on LinkedIn)
Worked on the OS flashing infrastructure for Nvidia's autonomous driving hardware platform. Implemented incremental flashing to reduce testing delays.

Find more information on LinkedIn or my personal website.

Publications

- "Learning to Detect Slip with Barometric Tactile Sensors and a Temporal Convolutional Neural Network", **A. Grover**, C. Grebe, P. Nadeau, and J. Kelly, IEEE Int. Conf. of Robotics and Automation (2022). Link to publication.

- "Certifiably Optimal Monocular Hand-Eye Calibration", E. Wise, M. Giamou, S. Khoubyarian, **A. Grover**, and J. Kelly, IEEE Int. Conf. on Multisensor Fusion and Integration (2020). Link to Publication.

Relevant Projects

Accurate Road Segmentation using Camera and LIDAR Data   **Project Link**
Pytorch, OpenCV
Implemented a Fully Connected Network (FCN) based Road Segmentation pipeline on Audi's A2D2 dataset. Implemented the late and early fusion strategy published by Caltagirone et. al. and achieved an average precision of over 90%. The code, as well as a video, along with a full report are available for further details.

Failure-Mode Analysis of A Learned Dexterous Hand Controller   **Project Link**
Tensorflow, OpenAI gym, mujoco
Conducted a failure mode analysis on learned DDPG based policies used to control a dexterous hand with tactile sensors, in an attempt to understand the utility of tactile information. The code, as well as a video, along with a full report are available.

Invariant EKF SLAM   **Project Link**
MATLAB
Implemented an Invariant EKF-SLAM method by representing the robot pose as a member of the special euclidean Lie group, with the goal to eliminate the problem of inconsistency. The code, as well as a video, along with a full report are available.