

Chris Agia

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EDUCATION

UNIVERSITY OF TORONTO
B.A.Sc. IN ENGINEERING SCIENCE
Year 4 - Expected May 2021
President's Scholarship Program
Robotics Major, Business Minor
Professional Experience Year
GPA: 3.82 / 4.0

SKILLS

PROGRAMMING

3+ years:

Python • C/C++ • MATLAB

1-2 years:

Assembly • Verilog HDL • Java

SOFTWARE TOOLS

Git • TensorFlow • NumPy

PyTorch • ROS • PCL

Simulink • Linux • Docker

PUBLICATIONS

- [1] K. Zhang, H. Hu, A. H. Tan, M. Ruan, C. Agia, and G. Nejat. Sim to real: Deep reinforcement learning for autonomous robot navigation in rough terrain. *Manuscript in preparation*, 2020.

COURSEWORK

UNDERGRADUATE

Machine Learning, AI
Statistics, Bayesian Inference
Numerical Methods, Optimization
Mobile Robotics, Manipulators
Algorithms, Data Structures
Control Systems, Path Planning
State Estimation, Mapping
Dynamics, Systems Software
Microprocessors, Electronics

EXTRACURRICULARS

NSight Student Mentorship Program
Academic Teaching/Counselling
Varsity Blues Soccer Team
Health and Fitness
Guitar/Bass
Reading

EXPERIENCE

AUTORONTO | COMPUTER VISION ENGINEER

UofT Self-Driving Vehicle Group - SAE/GM AutoDrive Challenge

August 2019 - Present | Toronto, ON

- Leading the development of a PointPillars 3D LiDAR detection pipeline for aUToronto's Object Detection Team

HUAWEI - NOAH'S ARK LAB | DEEP LEARNING RESEARCH INTERN

Autonomous Vehicles Research - Perception and Localization

May 2019 - Present | Toronto, ON

- Implemented a U-Net Fully Convolutional Network that predicts a binary road mask from LiDAR point clouds in real-time
- Developed a deep learning PointNet model for point-wise segmentation of stable and dynamic objects from 3D point sets
- Proposed a novel graph-based mapping method to improve multi-level surface localization and circumvent the UTM zone switching issue
- Performed extensive literature review (50+ papers) on the topics of object detection, semantic segmentation, and learning-based localization

UNIVERSITY OF TORONTO | UNDERGRADUATE RESEARCHER

Autonomous Systems Lab, Prof. Goldie Nejat - NSERC Grant

May 2018 - Aug 2018 | Toronto, ON

- Worked with a team of graduate researchers to investigate the application of Deep Reinforcement Learning (A3C) for autonomous rough terrain navigation
- Developed the ROS Navigation Stack for a Jaguar 4x4 search and rescue robot
- Improved the state estimation of the Jaguar 4x4 with an Extended Kalman Filter for sensor fusion of odometry information
- Implemented various SLAM methods to generate accurate 2D and 3D maps
- Coordinated several demos for corporate Vp's and news media

GENERAL ELECTRIC | SOFTWARE ENGINEERING INTERN

May 2017 - Aug 2017 | Markham, ON

PROJECTS

AUTONOMOUS PACKING ROBOT | C, ASSEMBLY, ARDUINO

Microcontroller Subsystem Member - Team placed 3rd/50

- Designed, built and programmed a robot that systematically sorts and packs up to 50 pills/minute to assist those suffering from dementia
- Created an efficient UI allowing a user to input packing instructions

HOSPITAL TRIAGE SYSTEM | PYTHON - MACHINE LEARNING

Ontario Engineering Competition 2019 - 1st Place Programming

- Developed a machine learning software solution to predict the triage score of emergency patients, allocate available resources to patients, and track key hospital performance metrics to reduce emergency wait times

WAREHOUSE LOGISTICS PLANNING | PYTHON - ALGORITHMS

UTEK 2019 Programming Competition - 1st Place

- Created a logistics planning algorithm that assigns mobile robots to efficiently retrieve warehouse packages - A* Path Planning, Clustering