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
Dean's List - Fall 2018, Winter 2019
Robotics Major, Business Minor
Professional Experience Year
GPA: 3.82 / 4.0

SKILLS

PROGRAMMING
3+ years:
Python • C/C++ • MATLAB
1-2 years:
Java • Assembly • Bash • Latex

SOFTWARE TOOLS
PyTorch • TensorFlow • NumPy
ROS • PCL • OpenCV • SciPy
Pandas • Git • Linux • Docker

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

ML4Good - Sustainability
Building an open source data and machine learning powered analytics platform to tackle some of the world's most challenging sustainability issues

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

EXPERIENCE

HUAWEI - NOAH'S ARK LAB | Deep Learning Researcher
Autonomous Vehicles Research - Perception and Localization
May 2019 - Present | Toronto, ON

- Developed a novel sparse CNN achieving state-of-the-art performance for 2D/3D Semantic Scene Completion. Paper in preparation, NeurIPS 2020
- Created a custom PyTorch framework to train and deploy over 10 leading LiDAR Segmentation models on two open source data sets
- Designed an F-CNN model that learns (end-to-end) to predict binary road masks from LiDAR point clouds at real-time speeds. Patented, 2020
- Proposed a graph-based mapping method to improve multi-level surface localization and circumvent the UTM zone switching issue. Patented, 2020

MCGILL UNIVERSITY | Machine Learning Researcher
Mobile Robotics Lab, Prof. David Meger, Prof. Gregory Dudek
January 2020 – Present | Toronto, ON

- Co-authored a study exploring the benefit of dense depth prediction for direct visual odometry. Paper accepted, CRV2020
- Investigating the use of attention mechanisms in Deep Reinforcement Learning frameworks. Paper in preparation, CORL2020

AUTORONTO | Autonomy Engineer - Object Detection
UofT Self-Driving Vehicle Group - SAE/GM AutoDrive Challenge
August 2019 - Present | Toronto, ON

- Leading the development of a PointPillars 3D LiDAR detection pipeline (vehicle-pedestrian) with aUToronto's Object Detection Team

UNIVERSITY OF TORONTO | Robotics Researcher
Autonomous Systems Lab, Prof. Goldie Nejat - NSERC USRA 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. Paper under review, IROS 2020.

PROJECTS

AUTONOMOUS PACKING ROBOT | C, Assembly, Arduino
Microcontroller Subsystem Member - Team placed 3^{rd}/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 - 1^{st} 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 - 1^{st} Place

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