

Daniel Dworakowski

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Experience

ASBLab, University of Toronto

Toronto, Ontario

Research Assistant

Sept 2018 - Dec 2020 (expected)

- Created a weakly supervised segmentation label generation method improving over prior literature by **20%** in text segmentation
- Designed a OCR + segmentation system achieving **state of the art** performance for single stage detection on ICDAR-15
- Created a novel robotic system capable of exploring and finding objects in an unknown environment using human cues, e.g. signs
- Online generation of text annotated occupancy grids for intelligent navigation and planning using OCR and SLAM
- Reimplemented and evaluated various published works related to meta learning, RL, and object detection
- Supervised three student thesis projects involving one-shot learning for object detection and learned indoor social navigation

NVIDIA

Holmdel, New Jersey

Machine Learning Software Engineering

Jan - Apr, Aug - Dec 2016, May - Aug 2017

- Researched, trained, and evaluated novel imitation learning models for lane keeping and speed control in self-driving cars
- Developed a software in the loop simulator and vehicle modeling for the evaluation of trained models streamlining CNN deployment
- Collaborated in the creation and verification of one-step data collection and labeling systems for end-to-end self-driving
- Implemented motion controllers for autonomous vehicles for path following and speed control to test experimental CNN models
- Accelerated CNN training and simulation speed over **30%** using GPU hardware decoding
- Real-time visualization and data manipulation using CUDA and C++ to improve the interpretability of the CNN and the vehicle

NVIDIA

Santa Clara, California

Graphics Software Engineer

May - Aug 2015

- Evaluated system wide frame to frame latency statistics and latency perceptibility resulting in a system testing QA framework
- Automated system rendering performance evaluation to autonomously quantify system KPIs
- Helped drive system-wide optimization and system quality assurance testing for Android products

Agfa Graphics

Mississauga, Ontario

Computer Engineer

Sept - Dec 2014

- Drove the development of a module to rapidly introduce new printer sensors and actuators using just a config file

Publications

A Robot Architecture Using Context to Find Products in Crowded Unknown Shopping Environments

Under Review

D. Dworakowski, C. Thompson, and G. Nejat

Oct 2020

Robots Understanding Contextual Information in Human-Centered Environments using Weakly Supervised Mask Data Distillation 

Under Review

D. Dworakowski, and G. Nejat


Oct 2020

An Autonomous Shopping Assistance Robot for Grocery Stores 

IROS Workshop

C. Thompson, H. Khan, **D. Dworakowski**, K. Harrigan, and G. Nejat

Oct 2018

End to End Learning for Self-Driving Cars 

arXiv

M. Bojarski, D. Del Testa, **D. Dworakowski**, B. Firner, B. Flepp, P. Goyal, L. D. Jackel, M. Monfort, U. Muller, et al.

Apr 2016

Projects

Autonomous Indoor Aerial Robot

Waterloo, Ontario

Deep Learning and Perception

Sept 2017 - Mar 2018

- Created a smart home blimp robot capable of collision avoidance in indoor environments
- Trained a CNN for predicting collision probability with a monocular camera using imitation learning and sim2real transfer learning
- Accelerated data collection by **>10x** by introducing an automated labeling system using privileged sensor information

Education

University of Toronto

Toronto, Canada

Master of Applied Science, Mechanical and Industrial Engineering

Sept 2018 - present

University of Waterloo

Waterloo, Canada

Bachelor of Applied Science, Mechatronics Engineering, Honours

Sept 2013 - June 2018

Honors & Awards

2019	Vector Scholarships In Artificial Intelligence (Vsai)	Vector Institute
2019	University Of Toronto Fellowship, Department Of Mechanical And Industrial Engineering	U. Toronto
2018	ASME - Northern Alberta Design Challenge Award	U. Waterloo
2018	Graduated With Distinction - Dean's Honours List	U. Waterloo