Alex Tomala

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Employment History

Uber ATG September 2019 – December 2019

Software Engineering Intern

- Improved prediction performance of a neural net model by using a new approach for representing map information
- Analyzed data with Spark to allow others to make informed choices on future experiments

University of Waterloo May 2019 – August 2019

Deep Learning Research Assistant

- Researched self supervised moving object detection to improve Reinforcement Learning performance in ViZDoom
- Assisted research on using normalizing flows for Bayesian Model-Based Reinforcement Learning
- Wrote infrastructure code for future experimentation in PyTorch

Petuum May 2018 – August 2018

Software Engineering Intern

- Researched text/caption generation from Chest X-ray images for medical use
- Achieved a 3–4x improvement to the abnormality F1 score compared to published work
- Developed infrastructure in PyTorch to allow for future experimentation with Chest X-ray models

Drive.ai August 2017 – December 2017

Software Engineering Intern

- Developed a novel Deep Learning algorithm to detect and classify objects around a car
- Implemented a new ground plane filter (using C++) that removed the need for a precomputed map while maintaining similar performance
- Optimized perception code used on the car to cut processing time per frame by 15%

University of Waterloo – Autonomoose January 2017 – August 2017

Autonomous Driving Research Assistant

- Created the initial perception code on the car using C++ and Python
- Developed a tool in Python to generate 3D environments through augmented OpenStreetMap data
- Devised an algorithm to extend 2D object detections to 3D using a point cloud

Massachusetts Institute of Technology May 2016 – August 2016

Research Assistant

- Created and wrote about a novel method of determining material synthesis similarity
- Investigated methods to classify scientific papers using Machine Learning methods in Python. Results were published in a coauthored paper in Scientific Data (Nature subjournal)
- Created a web app written in D3.js that reduces annotation time of material synthesis data by 90%

Skills

Programming Languages: Python, C, C++, JavaScript, Racket, MIPS assembly, Coq

Machine Learning: PyTorch, TensorFlow, NumPy, Keras, Scikit-learn, Gensim

Other: D3.js, React, ROS, MapReduce, Bash, Latex, VHDL, Docker, FPGA, Computer Architecture

Education

University of Waterloo September 2015 – April 2020

Candidate for Bachelor of Computer Science – 4B – 94% Major average