Alex Tomala

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Employment History

University of Waterloo May 2019 – Present
Deep Learning Research Assistant

- Researching new Reinforcement Learning techniques to improve performance in 3D games

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, Computer Architecture, Latex, VHDL, FPGA, Docker

Education

University of Waterloo September 2015 – April 2020
Candidate for Bachelor of Computer Science - 4A - 94% Major average

- Selected Courses (Advanced Level if possible): Functional Programming, Optimization, Calculus I-III, Linear Algebra I/II, Logic and Computation, Data Structures, Numerical Computation, Operating Systems
- Audited a graduate course on Autonomous Driving Perception

Projects

UWaterloo Enrollment Viewer

- Made a React website that graphs the number of students enrolled in each course over time
- Data is collected using a Python scraper running on an AWS EC2 instance