Samuel Triest

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Education

University of Rochester **Fall 2016 - Spring 2020**

Degrees: B.S. in Computer Science, B.A. in Business, minor in Electrical/Computer Engineering (robotics focus)

GPA: 3.99/4.00

Advisors: Thomas Howard (U of R), Yuhao Zhu (U of R), John Dolan (CMU)

Relevant Coursework: Machine Learning, Robot Control, Computer Vision, Data Mining, Algorithms, Network Analysis

Technical Skills

Programming Languages: Python, Java, C, Julia, SQL

Frameworks/Tools: Pytorch, Tensorflow, Keras, Git

Research Experience

Research Intern **September 2019 - present**

Dolan Lab, Carnegie Mellon University

Advisor: John Dolan

Continuing work on trajectory generation for autonomous vehicles in dense traffic via deep reinforcement learning. Investigating multi-task learning and learning from demonstrations to learn behaviors in high-interaction scenarios.

Robotics Institute Summer Scholar **June 2019 - August 2019**

Dolan Lab, Carnegie Mellon University

Advisor: John Dolan

Researched reinforcement learning-based approaches to trajectory generation in autonomous vehicles, focusing on scenarios with high degree of interaction between vehicles. Developed algorithms for trajectory generation that combined traditional controllers and deep imitation learning and validated results on real-world highway data.

Undergraduate Researcher **October 2018 - present**

Horizon Lab, University of Rochester

Advisor: Yuhao Zhu

Researched integration of optical and hardware elements into training of computer vision algorithms in resource-constrained environments. Implemented optical forward-modeling using point-spread functions, and implemented motivational experiments for optical-algorithmic co-design.

Papers

Samuel Triest, Adam Villaflor, John M. Dolan

Learning Low-level Continuous Control for Ramp Merging in Dense Traffic

2019 RISS Working Papers Journal

Samuel Triest, Daniel Nikolov, Jannick Rolland, Yuhao Zhu

Co-Optimization of Optics, Architecture and Computer Vision Algorithms

WAX @ PLDI 2019

Presentations

Robotics Institute Summer Scholars Research Showcase (Poster)	August 2019
WAX @ PLDI 2019 (Talk)	June 2019
University of Rochester Undergraduate Research Symposium (Talk)	April 2019
ACM Student Research Competition @ ASPLOS 2019 (Talk, Poster)	April 2019

Awards, Grants, Scholarships

NSF REU Scholarship (NSF Award 1659774, CMU RISS)	June 2019
Gold Medalist, ACM Student Research Competition @ ASPLOS 2019	April 2019
Travel grant for ASPLOS 2019	April 2019
Dean's Scholarship (University of Rochester)	September 2016-present
Dean's List (University of Rochester, 6/6 semesters)	September 2016-present

Teaching and Professional Service

Teaching Assistant

Artificial Intelligence	Spring 2018, Fall 2018
Algorithms	Fall 2018, Spring 2020
Computer Architecture	Spring 2019
Business Information Systems	Spring 2019

UR Robotics Club

Vice President	May 2019 - May 2020
President	May 2018 - May 2019
Lab Manager	May 2017 - May 2018

Industry Experience

Product Management Intern **Summer 2018**
Waterline Data

Conducted research and created POC for scheduling jobs using constraint satisfaction. Contributed several plugins for Waterline integration with third-party software. Expanded scope of Waterline's product demo, assisted with updating sandbox and demos for Microsoft Azure.

Engineering Intern **Summer 2017**
Waterline Data

Contributed test cases and automation to several product features. Created a utility to detect duplicate data. Leveraged existing APIs of the Waterline Data Catalog to determine the likelihood of data duplication between several hundred data resources using existing metadata and generate a report in Tableau.

Independent Study Projects

Domain-Specific Language for Graph Algorithms

Designed and provided theoretical motivation for a domain-specific language for graph algorithms based on highly composable parallel graph primitives. Implemented parallel versions of a representative set of graph algorithms (including BFS, SSSP, connected components, k-core decomposition) using this language.

Network Analysis of Autonomous Vehicles

Performed network analysis on emergent autonomous vehicle communication networks. Analyzed how various communication strategies between vehicles influence key network characteristics such as connectivity, throughput, centrality, etc.

Parallel SCAN Clustering via Connected-Components

Proposed a modification to the SCAN algorithm for graph clustering using a connected components algorithm instead of traversal. Profiled executions of these algorithms at scale and demonstrated a 400-fold reduction in serialized operations by using connected components.

6 DOF Robot Arm

Led a team of roughly ten undergraduates in the design, fabrication, and algorithm development of a 6 degree-of-freedom robot arm. Implemented forward and inverse kinematics, and probabilistic roadmap-based control in operational space.