SAMUEL M. BATEMAN

Robot Learning Ph.D. Student, Princeton University
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EDUCATION

Princeton University *August 2025 - Present*
Ph.D. Student in Electrical and Computer Engineering
Research Focus: Reinforcement Learning and Diffusion Models
Advisor: Dhruv Shah

University of Colorado Boulder *August 2016 - May 2020*
B.S. in Computer Science
B.S. in Applied Mathematics
Relevant Coursework: Robotics, Operations Research, Computer Vision, Autonomous Vehicles Seminar, Analysis, PDEs, Markov Processes

AWARDS

NSF Computer and Information Science and Engineering Graduate Fellowship (CSGrad4US)
Full funding for 3 years of a PhD program, identical support to NSF GRFP.

CONFERENCE PUBLICATIONS

Yi Yang, Xuran Zhao, H. Charles Zhao, Shumin Yuan, **Samuel M. Bateman**, Tiffany Huang, Will Maddern, Evaluating Global Geo-alignment for Precision Learned Autonomous Vehicle Localization using Aerial Data, *IEEE International Conference on Robotics and Automation* ***(ICRA), 2025***

Samuel M. Bateman, Kyle Harlow, and Christoffer Heckman, Better Together: Online Probabilistic Clique Change Detection in 3D Landmark-Based Maps, *IEEE/RSJ International Conference on Intelligent Robots and Systems* ***(IROS), 2020***.

Thibaud Teil, **Samuel M. Bateman**, and Hanspeter Schaub, Autonomous On-Orbit Optical Navigation Techniques for Robust Pose-Estimation, *AAS Guidance, Navigation and Control Conference, 2020*.

WORKSHOP AND JOURNAL PUBLICATIONS

Samuel M. Bateman, Ning Xu, H. Charles Zhao, Yael Ben Shalom, Vince Gong, Greg Long, and Will Maddern, Exploring Real World Map Change Generalization of Prior-Informed HD Map Prediction Models, *IEEE/CVF Conference on Computer Vision and Pattern Recognition* ***(CVPR), 2025***, *Workshop on Autonomous Driving (WAD)*.

Thibaud Teil, **Samuel M. Bateman** and Hanspeter Schaub, Closed-Loop Software Architecture for Spacecraft Optical Navigation and Control Development, *The Journal of Astronautical Sciences, 2020*.

PROFESSIONAL EXPERIENCE

Online Mapping and Perception - Nuro December 2022 - August 2025
Senior Machine Learning Research Engineer *Mountain View, CA*

- Core contributor and Research Lead for Online Mapping initiatives from research proposal to on-road, driverless deployments.
- Core researcher for multi-task learning and representation learning for Nuro's Unified Perception Model.
- Promoted to Senior MLE in April 2024.

Mapping - Nuro June 2020 - Nov 2022
Research Software Engineer *Mountain View, CA*

· Developed algorithms for nonlinear optimization, sensor modeling, and state estimation for multi-city scale, high accuracy mapping.
· Promoted from junior engineer in April 2022.

Autonomous Robotics and Perception Group - Computer Science - CU Boulder May 2019 - June 2020
Undergraduate Researcher *Boulder, CO*

· Studied under Professor Christoffer Heckman to develop a novel approach to the dynamic, semantic, probabilistic SLAM problem for localization and mapping of long-term robotics deployments.

Autonomous Vehicle Lab - Aerospace Engineering - CU Boulder Aug 2018 - May 2020
Research Assistant *Boulder, CO*

· Developed much of the optical sensors and navigation simulation capabilities of the high-fidelity astrodynamics framework, Basilisk, as Python extensions written in C++.
· Worked closely with a PhD Student to perform novel research in the field of state estimation in astrodynamics using simulated optical sensors.

Massachusetts Institute of Technology - Lincoln Laboratory May 2019 - Aug 2019
Summer Research Intern *Lexington, MA*

· Performed research on unsupervised deep learning for semantic segmentation.
· Worked with an interdisciplinary team in the Humanitarian Aid and Disaster Relief Systems group.

Department of Computer Science - CU Boulder Sept 2017 - Dec 2017
Computer Systems Course Assistant *Boulder, CO*

· Held office hours for the Computer Systems course in the Computer Science Department with topics including: Virtual Memory, System Interrupts, Buffer Overflow Attacks, Return-Oriented Programming, Pipelining, Caching, Instruction-Level Parallelism, Assembly Programming, Computer Architecture and more.

SERVICE

ICRA 2021-2025 Reviewer
IROS 2022 Reviewer
Instructor for Nuro ML University Internal Training Program
Organizer of Nuro Mapping Reading Seminar

HONORS

CU Boulder Engineering Merit Scholarship
CU Boulder Engineering Discovery Learning Award for Outstanding Undergrad Research
Dean's List