

RYAN TSE

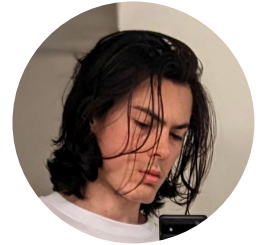
Researcher, engineer, mathematician

@ ryantse100@gmail.com

rytse.github.io

rytse

rytse



Interested in the intersection of math and robotics. Masters student at the University of Maryland researching the applications of machine learning for dynamics and control. Research engineer at Matic, an indoor robotics startup. Former radar signal processing engineer at Nuro, a self-driving car startup.

WORK EXPERIENCE

Matic

Research Engineer - (Dr. Navneet Dalal)

June 2023 – Present

Mountain View, CA

Designing algorithms to address open problems in simultaneous localization and mapping (SLAM) for robotics, including nightly map optimization and camera auto-calibration. Building performant 3D visualization tools to streamline SLAM research and development. Working in Rust and Python.

Nuro

Intern - (Dr. JQ Huang)

June 2020 – August 2021

Mountain View, CA

Developed, simulated, and implemented digital signal processing algorithms for radars on self-driving delivery vehicles. Worked in bare-metal C, C++, and Matlab.

Intelligent Automation Incorporated

Intern - (Dr. Babak Azimi-Sadjadi)

June 2019 – August 2019

Rockville, MD

Assisted in the hardware implementation of a bursty space-time continuous phase modulation receiver by analyzing quantization error. Assisted in developing indoor positioning system technology by modifying tracking filters to include IMU data. Worked in Matlab.

Naval Research Laboratory

Intern - (Dr. Yu-hsin Chen)

May 2018 – August 2018

Washington, DC

Developed an efficient bursty satellite ranging protocol in GNURadio. Applied control loops to correct for channel impairments and implemented packet protocols. Worked in C++ and Python.

Naval Research Laboratory

Intern - (Donald Sofge)

June 2017 – August 2017

Washington, DC

Researched deep learning-based approaches to vehicle trilateration, working with regression models and reinforcement learning agents. Worked in C, C++, and Python. Co-author of Publication [3].

TOOLS

Experienced:

Rust Python C C++ PyTorch JAX Git

Familiar:

Matlab Verilog \LaTeX Tensorflow OpenCV ROS

Novice:

KiCAD Cadence Simulink ASM AWS+GCP

EDUCATION

University of Maryland

Undergraduate Student

Aug 2019 – May 2022

College Park, MD

Double degree in mathematics and electrical engineering. First author of Publication [2].

University of Maryland

Masters Student - (Prof. Kaiqing Zhang)

Aug 2022 – Present

College Park, MD

Masters degree in electrical and computer engineering with a controls speciality. Thesis in representation learning for reinforcement learning. First author of Publication [1]. Expected to graduate May 2024.

PUBLICATIONS

- [1] R. Tse, "Samp2Sym: Discovering Continuous Invariances of Differentiable Models," Under review at The Twelfth International Conference on Learning Representations Tiny Papers, ICLR, 2024.
- [2] R. Tse, L. Cui, P. Kim, S. Swain, B. Cohen, and G. Das, "Space-based Ionosonde Receiver and Visible Limb-viewing Airglow Sensor (SIRVLAS): A CubeSat Instrument Suite for Enhanced Ionospheric Charge Density Measurements," Proceedings of the AIAA/USU Conference on Small Satellites, SSC19-WP2-14.
- [3] D. Lofaro, C. Taylor, R. Tse, and D. Sofge, "Wearable Interactive Display for the Local Positioning System (LPS)," In 19th ACM International Conference on Multimodal Interaction (ICMI 2017) Demonstration Session, ACM, 2017.