RYAN TSE

Electrical Engineering and Math Student

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Electrical engineering and math student interested in novel applications of "pure" math to engineering problems, particularly in control theory, machine learning, and digital signal processing. Currently working on radar digital signal processing at Nuro, a self-driving delivery vehicle startup. Planning to complete undergraduate studies in Spring 2022.

EXPERIENCE

Nuro

Intern (Radar)

June 2020 – January 2021 Mountain View, CA

Developing, simulating, and implementing digital signal processing algorithms for radars on self-driving delivery vehicles. Returning for Summer 2021.

Intelligent Automation Incorporated

Intern (Communications, Localization)

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.

Naval Research Laboratory

Intern (Communications)

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.

Naval Research Laboratory

Intern (Localization)

June 2017 – August 2017 Washington, DC

Researched deep learning-based approaches to vehicle trilateration, working with regression models and reinforcement learning agents. Co-wrote Publication [1].

blair3sat

Team Founder, President, and RF Payload Engineer

2017 – 2019 Rockville, MD

Developed a CubeSat to measure 3D ionospheric charge density profiles by receiving ground-based ionospheric sounders from space. Designed DSP algorithms for the instrument and lead the team in spacecraft engineering and fund seeking in an executive capacity. Secured $6,000 of funding and two corporate partnerships in 6 months. Co-wrote Publication [2].

EDUCATION

University of Maryland

Combined B.S./M.S. in Electrical Engineering
B.S. in Mathematics

Aug 2019 – Present

Select Completed Courses:

- Linear Algebra
- Multivariable Calculus
- Differential Equations
- Probability Theory
- Advanced Calculus
- Partial Differential Equations
- Differential Forms
- Electrodynamics and Modern Physics
- Digital Logic Design
- Signals and Systems Theory
- Engineering Probability

Select Courses In Progress:

- Optimization for Control
- Computer Organization
- Device Physics
- Digital Circuits and Systems
- Analog and Digital Electronics

Select Upcoming Courses:

- Random Processes
- Control Systems
- Communications Systems
- Computational Methods
- Abstract Algebra

TOOLS

Experienced:

Python C Matlab Java Git Linux

Familiar:

Verilog C++ Rust Julia R Tensorflow Keras OpenCV OpenAI Gym LaTeX

Novice:

ROS AWS GCP JS/HTML/CSS

PUBLICATIONS

[1] 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.

[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.