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 a combined B.S./M.S. by Spring 2023 and to pursue a PhD.

EXPERIENCE

Nuro

Intern (Radar)

June 2020 – August 2021 | Mountain View, CA

Developing, simulating, and implementing digital signal processing algorithms for radars on self-driving delivery vehicles. Worked Summer 2020, Fall 2020, and Summer 2021.

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 [1].

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 [2].

EDUCATION

University of Maryland

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

Aug 2019 – Present

Select Completed Courses

(star indicates graduate level course)

- Linear Algebra
- Multivariable Calculus
- Differential Equations
- Probability Theory
- Advanced Calculus
- Partial Differential Equations
- Differential Forms
- Electrodynamics and Modern Physics
- Device Physics
- Analog and Digital Electronics
- Digital Logic Design
- Computer Organization
- Optimization for Control *
- Systems Theory *
- Communications Systems

Select Current Courses:

- Optimal Control *
- Controls Lab
- Capstone Design: Accelerator Physics

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] 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.

[2] 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.