Javier Yu

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Education

PhD & MS Aeronautics and Astronautics, Stanford University   Sep. 2018 - Nov. 2024
Advisor: Mac Schwager, NSF Graduate Research Fellowship

B.S. Mechanical Engineering, SUNY University at Buffalo   Sep. 2014 - May 2018
Minors: Mathematics and Computer Science

Research Experience

Quadrotor Visual Navigation and Manipulation   May 2024 - Present
Research Scientist, Stanford University
- Developed a simulation framework that enables large scale photorealistic data generation for training of agile and robust quadrotor visual navigation policies.
- Exploring using multi-modal foundation models, fine-tuned with human demonstration data, as control policies for manipulator augmented quadrotors.

Online Gaussian Splatting Mapping   May 2022 - Present
Doctoral Researcher, Multi-robot Systems Lab, Stanford University
- Designed a Pytorch integrated ROS utility, SplatBridge, that enables real-time construction of Gaussian Splats with inputs from a range of sensing modalities.
- Demonstrated safe quadrotor teleoperation using SplatBridge's high-fidelity mapping capability to generate real-time action safety filters.
- Open-source code has over 190+ stars on Github, and was successfully deployed during a live, outdoor demonstration for DARPA/Intel to showcase mapping capabilities of a camera equipped quadrotor networked with 5G.

Distributed Neural Network Optimization   May 2022
Doctoral Researcher, Multi-robot Systems Lab, Stanford University
- Developed a novel algorithm for distributed optimization of neural networks for problems where data is distributed across many connected robots.
- Demonstrated improved performance against SOTA methods on collaborative classification, mapping, and reinforcement learning tasks.

Work Experience

Head Course Assistant - AA274a Principles of Robot Autonomy   Fall 2023
Stanford University
- Lead development of updated course materials including migrating course codebase from ROS1 to ROS2, and managed a seven person teaching team.
- Maintained a fleet of TurtleBot3 robots with NVIDIA Jetson onboard computers, and organized and conducted lab sections with a course size of 170+ students.

Skills

Programming Languages: Python (Adv.), C++ (Int.), MATLAB (Int.), Julia (Int.)
Libraries & Software: Linux, ROS, PyTorch, CUDA, OpenCV, Matplotlib, LaTeX
Relevant Coursework: Machine Learning, Convex Optimization I/II, Reinforcement Learning, Meta Learning, ML under Distribution Shift, Large Scale Matrix Computation