

## EXPERIENCE

### SUNY University at Buffalo, Research & Teaching Assistant

January 2023–Present

- Designed assignments challenging students to apply ROS concepts as a part of Robotics Algorithms course and developed automated methods for evaluating ROS based assignments.
- Engaged in cutting-edge research on **F1Tenth platform** (ref. publications), contributing to various projects aimed at advancing autonomous racing technology & developed a friction accurate **F1Tenth Simulator**.

### Aurigo Software Technologies, Software Developer II Software Developer I

January 2022–July 2022

July 2020–January 2022

- Implemented features for Aurigo's Masterworks Cloud platform using ASP .Net and MSSQL.
- Optimized performance of XML controls resulting in a **2.5x reduction in response time**.
- Mentored and Trained 3** freshers on Aurigo's Masterworks Cloud platform and industry code standards.
- Led a team of 6** in addressing product bugs and client feedback items during Q4 2020 & Q1 2021.

### Aurigo Software Technologies, Software Developer Intern

July 2019–June 2020

- Fixed issues in **Security Compliance** with Voluntary Product Accessibility Template (VPAT) standards.
- Performed **UI/UX** enhancements as outlined by Aurigo's 2021 roadmap using Leaner Style Sheets (less).

## SKILLS

Languages	Python, C++, Javascript, C#, MSSQL
Libraries	PyTorch, WandB, CasADi, Pandas, NumPy, OpenCV
Technologies	ROS, Gazebo, Unity3D, Git, Docker, Proteus, PLC, .Net

## RESEARCH EXPERIENCE / PROJECTS

### F1Tenth Autonomous Racing

Autonomy, Planning, Control

- Gained hands-on experience in **Autonomous Racing Systems**, honing skills in control algorithms, trajectory planning, and real-time decision-making, informing research and publication efforts.
- Published a research paper on **Kinematic Flat Controller**, exploring advanced control techniques for autonomous racing applications resulting in **8% lower** CPU utilization and little to no impact on ATE.
- Submitted a research paper on **Time-Optimal Trajectory Planning**, exploring a novel way to trajectory optimization using racing car dynamics leading to **20%** improvement in lap time.

### Flipkart GRiD AI Competition

Image Processing, Object Detection

- Designed and implemented image detection network to solve Object Detection in images, achieving a significant **96.3% accuracy** on validation.
- Secured **12th position nationwide** among a pool of 1200 participating teams.

## PUBLICATIONS

- S. Rajguru, Y. Dighe, Y. Turkar, C. Aluckal, N. Kale, K. Dantu, "SAGA-F1T: Surface-Adaptive Grip-Aware Trajectory Generation for F1Tenth Autonomous Racing"**, Submitted to IEEE ICRA'24 (International Conference on Robotics and Automation), Awaiting Review.
- Y. Dighe, Y. Kim, **S. Rajguru**, Y. Turkar, T. Singh, and K. Dantu, "**Kinematics-Only Differential Flatness based Trajectory Tracking for Autonomous Racing**", Accepted for publication at IEEE iROS '23 (International Conference on Intelligent Robots and Automation).
- L. Kanungo, N. Garg, A. Bhohe, **S. Rajguru** and V. Baths, "**Wheelchair Automation by a Hybrid BCI System Using SSVEP and Eye Blinks**", 2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC), Melbourne, Australia, 2021, pp. 411-416, doi: 10.1109/SMC52423.2021.9659266.

## EDUCATION

### University at Buffalo, The State University of New York, Buffalo, NY

August 2022–Present

Master of Science in Engineering Sciences, Robotics - GPA: 4.00/4.00 (Current)

### Birla Institute of Technology and Science, Pilani, India

July 2015–June 2020

Bachelor of Technology in Electronics & Instrumentation Engineering - GPA: 3.02/4.00

Master of Science in Physics – GPA: 3.02/4.00