Sai Haneesh Allu

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Education

The University of Texas at Dallas, *Ph.D. in Computer Science* 2022 – Present

Indian Institute of Technology (IIT) Delhi, *M.Tech in Control and Automation* 2018 – 2020

National Institute of Technology Warangal, *B.Tech in Electrical and Electronics Engineering* 2012 – 2016

Skills

Research expertise: Efficient path planning, robot exploration and navigation, SLAM, simulation and control of mobile robots, mobile manipulation

Software development: Python, ROS, PyTorch, OpenCV, Gazebo, Java3D, C++, MATLAB, Simulink, Git/Github, DroneKit-python

Experience

Intelligent Robotics and Vision Lab (PI: Dr. Yu Xiang), *Graduate Research Assistant* 2022 – Present

Dallas, TX

- Developed algorithms for autonomous exploration and real-time semantic mapping
  - Optimized navigation in large-scale unknown environments with a custom exploration module
  - Devised 2-layer representation of object semantics and environment geometry for faster updates
- Developed trajectory optimization and benchmarking techniques for real-world robot manipulation
  - Created reproducible, marker-free scenes for manipulation benchmarking
  - Formulated point-cloud trajectory optimization for fast joint grasp and motion planning
- Led numerous demos and presentations of lab-related research activities

VECROS Technologies, *Co-Founder and CTO* 2020 – 2021

Delhi, India

- Developed a VIO based autonomous aerial navigation system with real-time edge processing
- Led the team in developing beyond visual line of sight control system for quad-rotor systems
- Raised $600K during the seed funding round

Swarm Intelligence Lab (PI: Dr. Shubhendu Bhasin), *Graduate Student Researcher* 2019 – 2020

Delhi, India

- Established motion capture test bed and optimized camera coverage for calibration
- Researched and implemented formation control algorithms, developing a target capture mechanism.

Sterlite Tech, *Operations Engineer* 2016 – 2017

MH, India

- Analyzed fiber draw process and implemented grounding mechanism to dissipate static charges.
- Collaborated in writing documentation for troubleshooting and analyzing machine breakdowns

Power Electronics Lab (PI: Dr. Porpandiselvi S), *Undergraduate Student Researcher* 2015 – 2016

Warangal, India

- Developed a high-frequency buck-boost LED driver, achieving 0.99 power factor

Publications

1. **Sai Haneesh Allu**, Itay Kadosh, Tyler Summers, Yu Xiang. "Autonomous Exploration and Semantic Updating of Large-Scale Indoor Environments with Mobile Robots." *Under submission to ICRA 2025*.
   Project Webpage | Code | arXiv | Video
2. Yu Xiang, **Sai Haneesh Allu**, Rohith Peddi, Tyler Summers, Vibhav Gogate. "Grasping Trajectory Optimization with Point Clouds." *IEEE/RSJ IROS 2024*.
   Project Webpage | Code | arXiv | Video
3. Ninad Khargonkar*, **Sai Haneesh Allu***, Yangxiao Lu, Jishnu Jaykumar P, Balakrishnan Prabhakaran, Yu Xiang. "SceneReplica: Benchmarking Real-World Robot Manipulation by Creating Replicable Scenes." *ICRA 2024*.
   Project Webpage | Code | arXiv | Video
   ** denotes equal contribution*
4. **Sai Haneesh Allu**. "Formation Control of Quadcopters." *Master's Thesis, Indian Institute of Technology, Delhi, 2020*.
   Code | Paper | Video

Other Experience

Professional Service:

- Reviewer for IROS 2024, ICRA 2025
- Organizing member - Workshop for Neural Representation Learning for Robot Manipulation at CoRL 2023

Teaching Assistant:

- Computer Graphics, Programming Language Paradigms at UT-Dallas
- System Identification, Advance Control Lab at IIT Delhi

Awards and Recognitions

Prof. A.K. Sinha Award for achieving highest GPA (9.8/10) among 140 graduates — IIT Delhi, 2020

Best Teaching Assistant Award for outstanding teaching support and mentoring, — IIT Delhi, 2019

Special Award for exceptional performance and quick learning — Sterlite Tech, 2017