Sai Krishna Ghanta

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Ph.D. candidate in AI specializing in robotics perception and multi-robot systems, with deep expertise in SLAM, computer vision, and machine learning. I have delivered distributed perception and localization solutions for robotic systems, with publications in IROS, ICRA, and T-AI.

EDUCATION

1. Franklin College of Arts and Sciences, University of Georgia, Athens **August 2024 - Present**
PhD in Artificial Intelligence *GPA:* **3.97/4**

2. Dr. SPM International Institute of Information Technology **November 2020 - June 2024**
Bachelor of Technology in Data Science and Artificial Intelligence *GPA:* **8.96/10**

- Dean's List of Academic Excellence Award 2021, 2023

EXPERIENCE

1. HeRoLab Lab, School Of Computing UGA **August 2024 - Present**
Graduate Research Assistant, Advisors: Dr. Ramviyas Parasuraman *Athens, Georgia*

- Pioneered "Policies over Poses", a multi-agent reinforcement learning based planar trajectory optimization, producing high-quality initial seeds for non-convex solvers via edge-wise sequential pose refinements.
- Developed an online 3D spatial exploration framework (SPACE) for multi-robot systems utilizing situational awareness and dynamic filter to mitigate ghosting trail effect in 3D reconstructions.
- Introduced a distributed multi-robot relative localization approach (MGPRL) leveraging uncertainty-aware Gaussian Processes and Wi-Fi RSSI signals for robust, efficient pose estimation in GPS-denied environments.
- Currently working on VLMs and LLMs based informative sampling with a focus on semantic priors on sampling and non-stationary kernels for gaussian processes.

2. Louisville Automation & Robotics Research Institute **January 2023 - June 2024**
Visiting Research Intern (Summer 2023), Advisor: Dr. Sabur Baidya, Dr. Madan Mohan *Kentucky, USA*

- Developed 3DS-SLAM, a real-time 3D Object Detection in the Visual SLAM with RGB-D and LiDAR.
- Investigated on reliability of Camera-LiDAR sensor fusion calibration mechanisms for robotics use-cases.
- Worked on developing Physical Twin with Franka Emika Panda robotic arm and Haption Virtuose 6D RV.

3. Samsung R&D Institute, India **July 2022 - January 2023**
AI Research Intern *Remote*

- Designed and Developed Deep Learning based Generative Adversarial Networks (GAN) approaches for synthetic data generation for Optical Character Recognition (OCR) in Bixby Vision.
- Streamlined ViTGAN, designed morphological operations for handwritten text synthetic data generation for OCR.

4. SOIL Ltd - School of Innovation and Leadership **September 2021 - December 2021**
Machine Learning Intern *Hyderabad, India*

- Worked on implementing an NLP-based curation engine to assess the educational materials with OCR.
- Constructed an integrated NLP and CV pipeline to recognize the hand-written text and text summarization consolidated with harmful corpus detection in educational materials for 6D educational model.

5. Data Science Lab, IIIT Naya Raipur **January 2021 - August 2021**
Undergraduate Research Assistant, Advisors: Dr. Santosh Kumar, Dr. Mallikharjuna Rao K *Naya Raipur, India*

- Developed a scalable AI systems such as LIPAR: a person independent spatio-temporal visual speech recognition system via a mobile application, ViTDD: Vision Transformers based Drowsiness detection in real-time.
- Partly lectured, graded quizes for Data Preprocessing, Statistical Learning Theory, Representation Learning

POSITIONS OF RESPONSIBILITY

1. President for Indian Student Association — Jan 2025 - Present
2. Secretary of Artificial Intelligence and Machine Learning Club, IIIT Naya Raipur — June 2021 - June 2022
3. Student Volunteer at National Service Schema, NSS - IIIT Naya Raipur — December 2020 - June 2021
4. Technical Reviewer IEEE AiDaS 2023 and IROS 2025

TECHNICAL SKILLS

1. **Programming Languages**: Python, C, C++
2. **ML Frameworks**: OpenCV, Open3D, NLTK, Tensorflow, PyTorch, Pyspark, CUDA, cuDNN, OpenAI API.
3. **Robotic Frameworks**: ROS, ROS2, Gazebo, RViz, PCL, MoveIt, V-REP.

ACHIEVEMENTS

1. Recipient of IROS-SDC Travel Award — 2025
2. Recipient of International Travel Grant of 2500$, 6000$ - IIITNR's TEQIP II — 2023,2024
3. Recipient of Travel Grant for TENCON2023 Conference 1200$ - IIITNR's TEQIP — 2023
4. 1st Position (2400+ developers): Ernst and Young GDS (EY-GDS) Hackpions 3.0 — 2021
5. Recipient of the 100 Percent Scholarship honor in 10+2 Pre-University Programme - FIITJEE — 2016

PEER-REVIEWED PUBLICATIONS

1. **Ghanta Sai Krishna**, and Ramviyas Parasuraman. "SPACE: 3D Spatial Co-operation and Exploration Framework for Robust Mapping and Coverage with Multi-Robot Systems.", presented at BlockByBlock ICRA 2025 and submitted full contribution to IEEE Robotics and Automation Letters.

2. **Ghanta Sai Krishna**, and Ramviyas Parasuraman. "MGPRL: Distributed Multi-Gaussian Processes for Wi-Fi-based Multi-Robot Relative Localization in Large Indoor Environments.", accepted to IEEE IROS 2025.

3. **Ghanta Sai Krishna**, Kundrapu Supriya, and Sabur Baidya. "3DS-SLAM: A 3D Object Detection based Semantic SLAM towards Dynamic Indoor Environments." arXiv preprint arXiv:2310.06385 (2023), accepted to IEEE IROS 2025.

4. P. Nemani, **Ghanta Sai Krishna**, N. Ramisetty, B. D. S. Sai and S. Kumar, "Deep Learning based Holistic Speaker Independent Visual Speech Recognition," in *IEEE Transactions on Artificial Intelligence*, 2022, doi: 10.1109/TAI.2022.3220190.

5. **Ghanta Sai Krishna**, Kundrapu Supriya, and Sabur Baidya. "Adversarial Security and Differential Privacy in mmWave Beam Prediction in 6G networks." IEEE CSNet 2023.

6. Mallikharjuna Rao, K., **Ghanta Sai Krishna**, and Kundrapu Supriya. "Data preprocessing techniques: emergence and selection towards machine learning models-a practical review using HPA dataset." Multimedia Tools and Applications (2023): 1-20.

7. P. R. Medi, P. Nemani, **Ghanta Sai Krishna**, S.Vollala, "A Novel end-to-end Framework for Occluded Pixel Reconstruction with Spatio-temporal Features for Improved Person Re-identification," IEEE 2023 8th International Conference on Business and Industrial Research

8. **Ghanta Sai Krishna**, Dyavat Sumith, and Garika Akshay. "Epersist: A Two-Wheeled Self Balancing Robot Using PID Controller And Deep Reinforcement Learning." 2022 22nd International Conference on Control, Automation and Systems (ICCAS). IEEE, 2022.

9.**Ghanta Sai Krishna**, et al. "dScout: Unmanned Ground Vehicle for Automatic Disease Detection and Pesticide Atomizer." 2022 IEEE 7th International conference for Convergence in Technology (I2CT). IEEE, 2022.

10. P. Nemani, **Ghanta Sai Krishna**, K. Supriya and Santosh Kumar, "Speaker Independent Visual Speech Recognition: A Systematic Review and Futuristic Applications", *Elsevier Journal of Image and Vision Computing 123 (2023)*

ARTICLES UNDER REVIEW

1. **Ghanta Sai Krishna**, and Ramviyas Parasuraman. "MGPRL: Distributed Multi-Gaussian Processes for Wi-Fi-based Multi-Robot Relative Localization in Large Indoor Environments.", submitted to International Conference on Robotics and Automation 2026.

2. **Ghanta Sai Krishna**, and Ramviyas Parasuraman. "Policies over Poses: Reinforcement Learning based Distributed Pose-Graph Optimization for Multi-Robot SLAM.", submitted to IEEE International Symposium on Multi-Robot & Multi-Agent Systems 2025.

3. **Ghanta Sai Krishna**, and Ramviyas Parasuraman. "SPACE: 3D Spatial Co-operation and Exploration Framework for Robust Mapping and Coverage with Multi-Robot Systems.", submitted full contribution to IEEE Robotics and Automation Letters.

4. **Ghanta Sai Krishna**, Anmol Agarwal, Aparna Sinha and Debanjan Da. "Thermographic Fault Diagnosis: An eXplainable Compact Vision in Transformer Approach for Electrical Machine" submitted to IEEE Sensors Journal.