






Research Interests

Embodied AI, Robotics, Computer Vision, Reinforcement Learning, Representation Learning

Education

2017–2021 **B.E.(Hons.) in Electronics and Instrumentation Engineering**, *Birla Institute of Technology and Science, Pilani (BITS Pilani)*, Hyderabad, India

Publications


- [6] Jiazhao Zhang*, **Nandiraju Gireesh***, Jilong Wang, Xiaomeng Fang, Chaoyi Xu, Weiguang Chen, Liu Dai, He Wang. *GAMMA: Graspability-Aware Mobile MANipulation Policy Learning based on Online Grasping Pose Fusion*. **In Review** at IEEE International Conference on Robotics and Automation (**ICRA 2024**) 
- [5] **Nandiraju Gireesh***, Ayush Agrawal*, Ahana Dutta*, Snehasis Banerjee, Mohan Sridharan, Brojeshwar Bhowmick, Madhava Krishna. *Sequence Agnostic Multi-Object Navigation*. In IEEE International Conference on Robotics and Automation (**ICRA 2023**) 
- [4] **Nandiraju Gireesh**, D. A. Sasi Kiran, Snehasis Banerjee, Mohan Sridharan, Brojeshwar Bhowmick, Madhava Krishna. *Object Goal Navigation using Data Regularized Q-Learning*. In 18th IEEE International Conference on Automation Science and Engineering (**IEEE CASE 2022**) 
- [3] D. A. Sasi Kiran*, Kritika Anand*, Chaitanya Kharyal*, Gulshan Kumar, **Nandiraju Gireesh**, Snehasis Banerjee, Ruddra dev Roychoudhury, Mohan Sridharan, Brojeshwar Bhowmick, Madhava Krishna. *Spatial Relation Graph and Graph Convolutional Network for Object Goal Navigation*. In 18th IEEE International Conference on Automation Science and Engineering (**IEEE CASE 2022**) 
- [2] Mandan Naresh, **Nandiraju Gireesh**, Paresh Saxena, Manik Gupta. *SAC-ABR: Soft Actor-Critic based deep reinforcement learning for Adaptive BitRate streaming*. In 14th IEEE International Conference on COMmunication Systems & NETworkS (**IEEE COMSNETS 2022**) 
- [1] Xingyi Yang, **Nandiraju Gireesh**, Eric Xing, Pengtao Xie. *XRyGAN: Consistency-preserving Generation of X-ray Images from Radiology Reports*. arXiv Pre-print 

Research Experience

Embodied Perception and InteraCtion (EPIC) Lab, Peking University

Advisor Prof. He Wang

Mar 23 – **Research Intern**

Present  Introduced a fusion-driven, graspability-aware mobile manipulation method that ensures consistent temporal grasping pose observations. These observations can be encoded into a reward system, guiding the robot to emphasize detailed observations as it moves towards the best grasping positions. The approach's effectiveness was showcased through extensive real-world tests on a robot dog. [6]

Robotics Research Center (RRC), IIIT Hyderabad

Advisors Prof. Madhava Krishna, Prof. Mohan Sridharan, and Dr. Brojeshwar Bhowmick

May 21 – **Research Assistant**

- Mar 23
- Worked with researchers from TCS Research, Kolkata to improve and enhance the performance of embodied agents in object navigation, multi-object navigation and household tidying up tasks in both fundamentally novel and incremental performance driven ways.
 - Proposed Sequence Agnostic Multi-Object Navigation (SAM) task, wherein the agent is neither provided nor forced to compute a global order in which it locates instances of the target object classes. [5]
 - Proposed a modular RL-based method for the object-goal navigation task that addresses the problem of ‘where to go?’ using vision-based RL. [4]
 - Proposed a framework for the object-goal navigation task, that exploits a Spatial Relation Graph (SRG) which models the probability of proximity of objects and regions. [3]

Data Science Lab, BITS Pilani–Hyderabad

Advisor Prof. Paresh Saxena

Jan–May **Undergraduate Thesis Student**

- 2021
- Developed a system for generating adaptive video bit rates (ABR) as well as network coding rates using reinforcement learning called SAC-ABR. [2]
 - Our approach provides 27.42% higher average Quality of Experience (QoE) than state-of-the-art method Pensieve.

AI-for-Healthcare Lab, UC San Diego

Advisor Prof. Pengtao Xie

Mar–Aug **Research Intern**

- 2020
- Proposed a framework to generate view-consistent, high-fidelity, and high-resolution X-ray images from Radiology reports to facilitate radiology training of medical students. [1]
 - Our framework beats previous state-of-the-art methods by 17.7% and 15.8% on OpenI & MIMIC-CXR datasets on Visual Consistency measure respectively.

Awards

2018–2021 Prime Minister's Scholarship Scheme (PMSS)

Talks & Presentations

Apr 2023 *Embodied Mobile Manipulation*, EPIC Lab - PKU, 2023

Jan 2023 *Sequence-Agnostic Multi-Object Navigation*, RnD Showcase - IIIT Hyd, 2023

Jan 2022 *Object Goal Navigation using Data Regularized Q-Learning*, RnD Showcase - IIIT Hyd, 2022

Research Mentorship

Raghav Arora (RRC Intern, IIIT-H)

Karmanjyot Singh (B.Tech + MS at IIIT-H)

Ayush Agrawal (RRC Intern, IIIT-H)

Ahana Dutta (B.Tech + MS at IIIT-H)