Kowndinya Boyalakuntla

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Research Statement

I like to engage with the challenges at the confluence of robotics, language understanding, and action planning. I want to actively work on methods that allow robots to understand and manipulate complex, real-world environments. Robot Learning, Manipulation and Language-guided Robotics would be my main areas of interest.

Education

Rutgers University **New Brunswick, NJ**
MS in Computer Science, GPA: 3.786/4.0 *Sep 2022–May 2024(Expected)*
Advisor: Prof. Abdeslam Boularias
Master's Thesis: Diffusion models for relative pose generation of everyday objects.

Indian Institute of Technology (IIT) Tirupati **Tirupati, India**
B.Tech in Computer Science and Engineering, GPA: 8.42/10.0 *July 2017–July 2021*
Advisors: Prof. Sridhar Chimalakonda, Prof. Kalidas Yeturu
B.Tech Project: A Platform for Large Scale Auto Annotation of Scanned Documents Featuring Real-Time Model Building and Model Pooling.

Experience

Rutgers Robot Learning Lab **New Brunswick, NJ**
Graduate Student Researcher *Jan 2023–Present*
Currently working on:
- Diffusion-driven Monte-Carlo Tree Search for semantic rearrangement generation with real-world data.
- Diffusion-driven vision language imitation learning.

RISHA Lab **Tirupati, India**
Undergraduate Student Researcher *Dec 2019–May 2022*
Experienced junior researcher with papers in three major conferences, played a key role in over 10 projects at IIT Tirupati's RISHA Lab at the intersection of Empirical Software Engineering and Human-Computer Interaction, and skilled in using high-performance computing systems.

University of Waterloo **Waterloo, Canada**
Visiting Scholar *July 2020–Sep 2020*
Optimized RepoReaper for enhanced accuracy, achieving swift, sub-10-second metric computations on 1 million GitHub repositories, improving recall by 3% and reducing the false positive rate by 2%, without relying on GHTorrent.

Publications

2023: Chang, H., Gao, K.,**Boyalakuntla, K.**, Lee, A., Huang, B., Kumar, H.U., Yu, J. and Boularias, A., LGMCTS: Language-Guided Monte-Carlo Tree Search for Executable Semantic Object Rearrangement. arXiv preprint arXiv:2309.15821. Under Review for ICRA '24. Project page: https://lgmcts.github.io/

2023: Chang, H., **Boyalakuntla, K.**, Lu, S., Cai, S., Jing, E.P., Keskar, S., Geng, S., Abbas, A., Zhou, L., Bekris, K. and Boularias, A., Context-Aware Entity Grounding with Open-Vocabulary 3D Scene Graphs. In *7th Annual Conference on Robot Learning* (**CoRL**). Project page: https://ovsg-l.github.io/

2022: **Boyalakuntla, K.**, Chinnakali, M., Chimalakonda, S. and K, C., eGEN: an energy-saving modeling language and code generator for location-sensing of mobile apps. In *Proceedings of the*

30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE**) (pp. 1697-1700).

2022: **Boyalakuntla, K.**, Nagappan, M., Chimalakonda, S. and Munaiah, N., RepoQuester: A Tool Towards Evaluating GitHub Projects. In *2022 IEEE International Conference on Software Maintenance and Evolution* (**ICSME**) (pp. 509-513). IEEE.

2022: Venigalla, A.S.M., **Boyalakuntla, K.** and Chimalakonda, S., GitQ-towards using badges as visual cues for GitHub projects. In *Proceedings of the 30th IEEE/ACM International Conference on Program Comprehension* (**ICPC**) (pp. 157-161).

2021: Prashanth, K., **Kowndinya, B.**, Vijay, C., Teja, D., Rodge, V., Velaga, R., Deshmukh, R.A. and Kalidas, Y., A Platform for Large Scale Auto Annotation of Scanned Documents Featuring Real-Time Model Building and Model Pooling. In *International Conference on Computer Vision and Image Processing* (**CVIP**) (pp. 58-70). Cham: Springer International Publishing.

Honors and Awards

Oct 2022: Project (advised by Prof. Kalidas Yeturu) showcase at All IITs R&D Fair, IInvenTiv at IIT Delhi.

Dec 2019: Gold Medal in National Level Inter IIT Technical Meet 8.0 at IIT Roorkee (Ashoka's Tech for Change Challenge - High-Preparation Event category among 20 IITs).

Teaching and Mentoring Experience

Google Developer Student Clubs **Tirupati, India**
Community Lead *Feb 2019–Jul 2020*
Led Google Developer Student Clubs at IIT Tirupati, conducting 12 workshops and hackathons for 70+ students, mentoring through 15 sessions on Google technologies (Flutter and Android).

Skills

Programming: Python, C++

Libraries: PyTorch, OpenCV, PyBullet, Kornia, Three.js, Tensorflow, Isaac Gym, ROS

Extracurricular Activities

2021: Designed an android app for the convocation event at IIT Tirupati.

2020: Completed 80 hours of work as per National Service Scheme (NSS) ordinances and regulations.

2020: Designed the NSS webpage for IIT Tirupati and led the site's maintenance team.