

Apoorva Beedu

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EDUCATION

- **Doctor of Philosophy** Expected Dec 2024
Georgia Institute of Technology Atlanta, GA
Research Area: Computer Vision, Object Pose Estimation, Object and activity understanding, Self Supervision, Video analysis.
Advisor: Dr. Irfan Essa Co-advisor: Dr. Justin Romberg.
- **Bachelor of Engineering** August 2011-May 2015
PES Institute of technology Bangalore, India
Electrical and Electronics Engineering

RESEARCH PAPERS

- Zhikang Dong*, **Apoorva Beedu***, Jason Sheinkopf, and Irfan Essa. Mamba fusion: Learning actions through questioning. *arXiv preprint arXiv:2409.11513*, 2024
- Harish Haresamudram, **Apoorva Beedu**, Mashfiqui Rabbi, Sankalita Saha, Irfan Essa, and Thomas Ploetz. Limitations in employing natural language supervision for sensor-based human activity recognition—and ways to overcome them. *arXiv preprint arXiv:2408.12023*, 2024
- **Apoorva Beedu**, Harish Haresamudram, Karan Samel, and Irfan Essa. On the efficacy of text-based input modalities for action anticipation. *arXiv preprint arXiv:2401.12972*, 2024
- Karan Samel, **Apoorva Beedu**, Nitish Sontakke, and Irfan Essa. Exploring efficient foundational multi-modal models for video summarization. *arXiv preprint arXiv:2410.07405*, 2024
- Hyeongju Choi, **Apoorva Beedu**, and Irfan Essa. Multimodal contrastive learning with hard negative sampling for human activity recognition. *ICCV 2023 workshop on PerDream: PERception, Decision making and REasoning through Multimodal foundational modeling*, 2023
- Hyeongju Choi, **Apoorva Beedu**, Harish Haresamudram, and Irfan Essa. Multi-stage based feature fusion of multi-modal data for human activity recognition. *arXiv preprint arXiv:2211.04331*, 2022
- **Apoorva Beedu**, Huda Alamri, and Irfan Essa. Video based object 6d pose estimation using transformers. *Vision Transformers: Theory and Applications workshop NeuRIPS (2022)*, 2022
- Huda Alamri, Anthony Bilic, Michael Hu, **Apoorva Beedu**, and Irfan Essa. End-to-end multimodal representation learning for video dialog. *Vision Transformers: Theory and Applications workshop NeuRIPS (2022)*, 2022
- **Apoorva Beedu**, Zhile Ren, Varun Agrawal, and Irfan Essa. Videopose: Estimating 6d object pose from videos. *arXiv preprint arXiv:2111.10677*, 2021
- Harish Haresamudram, **Apoorva Beedu**, Varun Agrawal, Patrick L Grady, Irfan Essa, Judy Hoffman, and Thomas Plötz. Masked reconstruction based self-supervision for human activity recognition. In *Proceedings of the 2020 ACM International Symposium on Wearable Computers*, pages 45–49, 2020

INTERNSHIPS

- **Facebook Reality Lab** Summer '21
Research Intern, Oculus Lab Atlanta(remote), USA
Host: Dr. Chengde Wan Dr. Robert Wang
– Developed a model to track a pen, and estimate 6D pose of the pen for Hand-Pen interaction.

- **Microsoft Research**

Research Intern

Host: Dr. Amol Ambardekar Dr. Harpreet Sawhney

- Developed a model to estimate and refine 6D object poses for large day-to-day objects.

Summer '20

Atlanta(remote), USA

- **NodeIn Robotics**

Robotics Intern

Host: Dr. Suresh Kannan

- Worked on creating a map for indoor environment.
- Developed a method to enhance images, and identify cases when feature extractions fail

Summer '17 and '18

Connecticut, USA

PROFESSIONAL ACTIVITIES

- Reviewer for BMVC(2021-24), PerDream2023, VTTA2022

TEACHING EXPERIENCE

- **Graduate Teaching Assistant**

Course: OMSCS: 6476 Computer Vision

August 2017 - Present

Atlanta, USA

SKILLS

- **Languages** C++, python, MATLAB, numpy, scikit-learn, scipy, pandas, matplotlib.
- **Deep Learning Framework** PyTorch, TensorFlow(basic)

PROJECTS

- (2024 - Ongoing) unifying datasets for action recognition using LLMs.
- (2020) Self-supervised learning for human activity recognition from wearables.
- (2017) MBZIRC Competition: challenges involved detecting the right stem valve size, detecting corresponding wrench and rotating the stem for 360°.
- (2017) Traffic Sign Classification using HOG and SVM.
- (2015) Location Based Payload Imaging: PISAT is a student satellite, a project by the Crucible Of Research and Innovation (CORI), a unit of PESIT.

MENTORING

- Kara Bethany Liu
- Zhikang Dong, Jason Sheinkopf - Work led to the submission *Mamba fusion: Learning actions through questioning*.
- Hyeongju John Choi - Work led to a submission *Multimodal Contrastive Learning with Hard Negative Sampling for Human Activity Recognition (PerDream@ICCV2023)*
- Hrishikesh Kale