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

- 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. 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** Summer '20
  Research Intern Atlanta(remote), USA
  Host: Dr. Amol Ambardekar Dr. Harpreet Sawhney
  - Developed a model to estimate and refine 6D object poses for large day-to-day objects.

- **NodeIn Robotics** Summer '17 and '18
  Robotics Intern Connecticut, USA
  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

PROFESSIONAL ACTIVITIES

- Reviewer for BMVC(2021, 2022, 2023), CAI2024, PerDream2023, VTTA2022

TEACHING EXPERIENCE

- **Graduate Teaching Assistant** August 2017 - Present
  Course: OMSCS: 6476 Computer Vision Atlanta, USA

SKILLS

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

PROJECTS

- (2024 - Ongoing) Object state change detection using multiple modalities.
- (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
- Jason Sheinkopf
- Zhikang Dong
- Hyeongju John Choi - Work led to a submission Multimodal Contrastive Learning with Hard Negative Sampling for Human Activity Recognition (PerDream@ICCV2023)
- Hrishikesh Kale