Pranay Reddy Anthireddy

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Education

University of Massachusetts Amherst **Expected May 2024**

Masters of Science in Computer Science *GPA: 3.89/4*

Relevant Courses - Computer Vision, Neural Networks, Advanced Natural Language Processing, 3D Computer Vision, Machine Learning, Distributed Operating Systems, Systems for Data Science, Advanced Algorithms.

Responsibilities - Graduate Teaching Assistant (Grader) for CS370 - Introduction to Computer Vision - Subhransu Maji

Indian Institute of Information Technology, Jabalpur **May 2022**

Bachelor of Technology in Electronics & Communication Engineering *GPA: 3.34/4*

Relevant Courses - Probability & Random Processes, Image Processing, Digital Watermarking, Signals & Systems, Fundamentals of Robotics, Computer Networks, Data Structures and Algorithms.

Work Experience

Meta (formerly Facebook) **Feb 2023 – May 2023**

Graduate Student Researcher *Mentor: Dr. Shane Moon, Aparajita Saraf - Reality Labs*

- Designed a new vision encoder to account for hand object interactions in the video data with the IMU signals to improve upon the IMU to Video alignment.
- Improved the performance of the pre-trained IMU encoder using multi-objective loss optimization and normalization techniques that outperformed the baseline IMU2CLIP model by 9.6% on recall and 6.2% on MRR.

Carnegie Mellon University **Sep 2021 – Nov 2022**

Research Intern *Mentor: Dr. Chen Wang, Prof. Sebastian Scherer - AirLab*

- Proposed a brand new few-shot object detection model free of fine-tuning and improved baseline by up to 60% (even higher than carefully fine-tuned models). Work has been **accepted at ECCV 2022**.
- Contributed to PyPose, a physics-based deep learning optimisation library, where I worked on developing euler2SO3, and Adjoint functions. Work has been **accepted at CVPR 2023**

Indian School of Business, Hyderabad **May 2021 – Aug 2022**

Research Intern *Mentor: Dr. Sumeet Kumar - SRITNE*

- Curated three new datasets from scratch, fine-tuned on SimCLR and Supervised Contrastive Learning, established optimal accuracies for the product identification task, and created the pipeline for end-to-end ad recognition.

Publications

[1] Wang, C., Gao, D., Xu, K., ...**Pranay Reddy**...,Scherer, S., **PyPose: A Library for Robot Learning with Physics-based Optimization.,** (CVPR 2023, Accepted) **[Link]**

[2] Bowen Li, Chen Wang, **Pranay Reddy**, Seungchan Kim, Sebastian Scherer, **"AirDet: Few-Shot Detection without Fine-tuning for Autonomous Exploration,"** (ECCV 2022, Accepted) **[Link]**

Skills

- **Frameworks:** PyTorch, TensorFlow, Flask, Keras, PyTorch Lightning, Hugging Face
- **Tools and Languages:** Python, C/C++, Bash, MATLAB, Git, Docker, Azure, GCP, AWS
- **Miscellaneous:** Numpy, Pandas, TensorRT, ONNX, CUDA, LLMs, scikit-learn, WandB, ffmpeg, PEFT

Selected Projects

Find the complete list here

- **Compact Diffusion Models** **[Link]**
  Developed a compact diffusion model for high-fidelity image generation on resource-constrained devices, leveraging techniques like mixed-precision training, model compression, post-training quantization, and knowledge distillation, with evaluations conducted on the CIFAR-10 dataset.
- **Nerve Segmentation System** **[Link]**
  Built a nerve structure identification tool using Semantic Segmentation on ultrasound images, leveraging U-Net architecture to achieve a 75% dice coefficient. Incorporated data augmentation and transfer learning to enhance model robustness and adaptability to diverse imaging scenarios.

Achievements

- **Winner**: Seldonian ML Toolkit Competition **[Link]**

Volunteering

- **Reviewer:** IEEE Robotics and Automation Letters (RA-L).