Yogesh KULKARNI

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https://www.linkedin.com/in/ykulkarn/ Google Scholar

Research Interests

My research centers on building multimodal foundation models with reasoning capabilities that integrate vision, language, and audio through cross-modal alignment and grounding via Refinforcement Learning.

Major Interests : Multimodal Large Language Models (Alignment, Reasoning, Grounding), Data Efficient Reinforcement Learning, Audio - Video Understanding

Education

May 2028 | Aug 2024 — **Arizona State University, Tempe, AZ, USA**
Ph.D. in Computer Science | Advisor : Dr. Pooyan Fazli | **GPA :** 4.29/4.0

May 2024 | Aug 2022 — **University of Southern California, Los Angeles, CA, USA**
Master of Science in Computer Science | **GPA :** 3.67/4.0

May 2022 | Aug 2018 — **Pune Institute of Computer Technology, Pune, India**
Bachelor of Engineering in Computer Engineering | **CGPA :** 9.8/10.0

Experience

Present | Aug 2024 — **People and Robots Laboratory (PeRL), Arizona State University, Tempe, AZ**
Graduate Research Assistant | Advisor : Dr. Pooyan Fazli
- Developed VideoPASTA, a framework enhancing video-language models by generating targeted adversarial examples and applying Direct Preference Optimization with only 7K pairs
- Designed VideoSAVi, a self-training pipeline enabling video-language models to reason without external supervision, achieving state-of-the-art on MVBench (74.0%)

Aug 2023 | Jun 2023 — **Nokia Bell Labs, New Providence, NJ, USA**
Research Scientist Intern | Advisor : Dr. Thomas Woo
- Implemented automatic model parallelism and partitioning for GPT-3 and LLaMA foundational models, increased training throughput by 15%
- Designed communication and compute efficient inter-node pipeline parallelism for training LLMs on heterogeneous clusters

Mar 2024 | Jan 2023 — **USC Institute for Creative Technologies, Los Angeles, CA, USA**
Graduate Research Assistant | Advisor : Dr. Meida Chen
- Built a 3D style transfer pipeline with Vision Transformer backbone using CLIP guided gaussian splatting
- Utilized probabilistic diffusion models (DDPM) guided by semantic features and self-attention, leveraging pre-trained SparseUNet

Oct 2021 | Jul 2021 — **RBCDSAI (IIT Madras), Chennai, India**
Research Intern | Advisor : Dr. Nivethitha Somu
- Proposed an End-to-End framework for detecting Electricity Theft in Industrial Smart Grids
- Applied Enhanced Dynamic Time Warping for imputation, attaining 99% accuracy & Matthews Correlation Coefficient of 0.98

Oct 2020 | Jul 2020 — **DRDO HQ, New Delhi, India**
Research Intern
- Developed a novel, robust and scalable framework for malware analysis of images
- Constructed a Stacked Ensemble classifier for detecting LSB Matching Steganography with AUC of 0.98 & 0.87

Publications

2025 Yogesh Kulkarni, Pooyan Fazli "VideoPASTA : 7K Preference Pairs That Matter for Video-LLM Alignment" *Arxiv Preprint 2025* [PDF]

2024 Yogesh Kulkarni, Pooyan Fazli "VideoSAVi : Self-Aligned Video Language Models without Human Supervision" *Arxiv Preprint 2024* [PDF]

2021 Yogesh Kulkarni, S. Hussain, K. Ramamritham, N. Somu "EnsembleNTLDetect : An intelligent framework for electricity theft detection in smart grid" *In Proceedings of* IEEE International Conference on Data Mining Workshops **(ICDM 2021)** [PDF]

2021 Yogesh Kulkarni, K. Bhambani "Kryptonite : An adversarial attack using regional focus" *In Proceedings of* International Conference on Applied Cryptography and Network Security **(ACNS 2021)** [PDF]

2020 Yogesh Kulkarni, A. Gorkar "Intensive image malware analysis and least significant bit matching steganalysis" *In Proceedings of* IEEE International Conference on Big Data **(Big Data 2020)** [PDF]

Teaching Experience

Graduate Teaching Associate, Arizona State University

- CSE 485 : Computer Science Capstone I, Spring 2025
- CSE 240 : Intro to Programming Languages, Fall 2024, Spring 2025
- CSE 220 : Programming for Computer Engineering, Fall 2024

Honors and Awards

- Conference Travel Grant for ICDM conference in Auckland, NZ — Dec 2021
- IIT Madras Summer Fellowship — Sep 2021
- Conference Travel Grant for IEEE Big Data Conference in Atlanta, USA — Dec 2020

Professional Service

Conference Reviewer

- ICCV 2025
- CVPR 2025
- ACL Rolling Review (ARR)