ykulka10@asu.edu <u>Academic Website</u>

Education	Arizona State University, Tempe, AZ Doctor of Philosophy in Computer Science, GPA – 4.29/4.0 Advisor: Dr. Pooyan Fazli	August 2024 – May 2028
	<b>University of Southern California</b> , Los Angeles, CA Master of Science in Computer Science, GPA – 3.67/4.0	May 2024
	<b>Pune Institute of Computer Technology</b> , Pune, India Bachelor of Engineering in Computer Engineering, CGPA – 9.8/10.0	May 2022
Preprints	VideoPASTA: 7K Preference Pairs That Matter for Video-LLM Alignment Y. Kulkarni, P. Fazli arXiv preprint arXiv:2504.14096, 2025, Under Review VideoSAVi: Self-Aligned Video Language Models without Human Supervision Y. Kulkarni, P. Fazli arXiv preprint arXiv:2412.00624, 2024, Under Review at COLM'25	
Publications	<ul> <li>EnsembleNTLDetect: An intelligent framework for electricity theft detection</li> <li>Y. Kulkarni, S. Hussain, K. Ramamritham and N. Somu</li> <li>IEEE International Conference on Data Mining Workshops (ICDM), 2021</li> <li>Kryptonite: An adversarial attack using regional focus</li> <li>Y. Kulkarni, K. Bhambani</li> <li>International Conference on Applied Cryptography and Network Security (ACNS), 2022</li> <li>Intensive image malware analysis and least significant bit matching stegana</li> <li>Y. Kulkarni and A. Gorkar</li> <li>IEEE International Conference on Big Data (Big Data), 2020</li> </ul>	on in smart grid 1 lysis
Academic Research Experience	People and Robots Laboratory (PeRL), Tempe, AZ       August 2024 – Present         Arizona State University       Graduate Research Assistant with Dr. Pooyan Fazli         Developed VideoPASTA, a framework enhancing video-language models by generating targeted adversarial examples (spatial, temporal, cross-frame) and applying Direct Preference Optimization (DPO) with only 7K pairs, achieving significant benchmark improvements without human annotation and using efficient 32-frame sampling.         Designed and implemented VideoSAVi, a novel self-training pipeline enabling video-language models to reason over video content without external supervision by using a self-critique mechanism and DPO, achieving state-of-the-art on MVBench (74.0%) and gains on Perception Test (3.9%) and EgoSchema (6.8%).	
	USC Institute for Creative Technologies, Los Angeles, CA Graduate Research Assistant with Dr. Meida Chen Built a 3D style transfer pipeline with a Vision Transformer backbone using CLIP guided gaus colors to a synthetic point cloud with guidance from text prompts. Utilized probabilistic diff semantic features and self-attention, leveraging pre-trained SparseUNet for this problem. Explored Pix2Pix and CycleGAN with backbone architectures like Point Transformer, KPCo 3D Point Cloud Colorization in 3D Photogrammetric point clouds.	Jan 2023 - March 2024 ssian splatting for transferring real fusion models (DDPM) guided by onv, SparseUNet, and PointNet for
	<b>RBCDSAI (IIT Madras)</b> , Chennai, India Research Intern with Dr. Nivethitha Somu Proposed an End-to-End framework for detecting Electricity Theft in Industrial Smart Grids Applied Enhanced Dynamic Time Warping for imputation, Stacked Auto-Encoder for dimen GAN's for robustness attaining an impressive accuracy of 99% & Matthews Correlation Coeff	July 2021 - October 2021 a. asionality reduction & Conditional ficient of 0.98.
Industry Research Experience	Nokia Bell Labs, New Providence, NJ Research Intern with Dr. Thomas Woo Implemented automatic model parallelism and partitioning for GPT-3 and LLaMA foundations	June 2023 - August 2023 al models, increased model training

throughput by 15% across heterogeneous clusters. Designed and executed communication and compute efficient inter-node pipeline parallelism approach for training LLMs on

heterogeneous and geo-distributed cluster GPUs.

**DRDO HQ**, New Delhi, India

July 2020 - October 2020

Research Intern

Investigated Hex dump, EXIF data of images for identifying embedded payloads with sophisticated string-matching algorithms in Python.

Developed a novel, robust and scalable framework for malware analysis of images.

Constructed a Stacked Ensemble classifier using XGBoost, Catboost & Feedforward Neural Net for detecting LSB Matching Steganography both for color & grayscale images, with an AUC of 0.98 & 0.87 respectively.

TEACHINGGraduate Teaching Associate, Arizona State UniversityEXPERIENCECSE 485: Computer Science Capstone I, Spring 2025CSE 240: Intro to Programming Languages, Fall 2024, Spring 2025CSE 220: Programming for Computer Engineering, Fall 2024

Technical	Languages: Python, C/C++, SQL, JavaScript, LATEX		
SKILLS	Libraries/Frameworks: PyTorch, TensorFlow, Pandas, SpaCy, NumPy, DeepSpeed, ColossalAI		
	Analytical Tools & Databases: MongoDB, Docker, Spark, MLFlow, Kubernetes, GCP		
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	
SERVICE	Reviewer: ICCV'25, CVPR'25, ACL Rolling Review (ARR)		