

Ketul Shah

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Research Interests

Multimodal LLMs, LLM Agents, Action Recognition, Multi-View Vision, Synthetic Data, Domain Adaptation, Domain Generalization

Education

Johns Hopkins University	2020–Present
• <i>Ph.D. in Electrical and Computer Engineering</i> Advisor: Prof. Rama Chellappa	<i>Baltimore, MD, USA</i>
University of Maryland, College Park	2018–2020
• <i>M.S. in Electrical and Computer Engineering; GPA: 3.67/4.0</i>	<i>College Park, MD, USA</i>
Indian Institute of Technology, Madras	2013–2018
• <i>B.Tech & M.Tech in Electrical Engineering; GPA: 8.30/10.0</i> Minor in Operations Research Advisor: Prof. Kaushik Mitra	<i>Chennai, India</i>

Professional Experience

Amazon Web Services	Summer 2025
• <i>Applied Scientist Intern. Mentor: Dr. Mayank Bansal</i> <ul style="list-style-type: none">◦ Developed VideoMimic, an approach for video-based task replay for UI Agents.	<i>Santa Clara, CA</i>
Adobe Research	Summer 2024
• <i>Research Scientist Intern. Mentor: Dr. Fabian Caba Heilbron</i> <ul style="list-style-type: none">◦ Designed a self-refining agent for multimodal video retrieval; created benchmarks for this novel task.	<i>San Jose, CA</i>
Amazon Just Walk Out	Summer 2023
• <i>Applied Scientist Intern. Mentor: Dr. Robert Crandall</i> <ul style="list-style-type: none">◦ Worked on large-scale pre-training using multi-view videos.	<i>Seattle, WA</i>
Amazon Web Services	Summer 2021
• <i>Applied Scientist Intern. Mentors: Dr. Kaustav Kundu, Dr. Xinyu Li</i> <ul style="list-style-type: none">◦ Worked on using self-supervised representation learning for improving batch active learning.	<i>Seattle, WA (Remote)</i>
University of Maryland	Summer 2019
• <i>Research Assistant under Prof. Rama Chellappa</i> <ul style="list-style-type: none">◦ Worked on spatio-temporal action detection in untrimmed videos, specifically for infrared videos.	<i>College Park, MD</i>
NVIDIA	Summer 2016
• <i>Software Engineering Intern</i> <ul style="list-style-type: none">◦ Part of a multi-team venture to extract usage data of CPU farm from logged data; streamlined load allocation to the CPU farm while incorporating peak load times.	<i>Bengaluru, India</i>

Works Under Submission

• **MV2MAE: Multi-View Video Masked Autoencoders**

Ketul Shah, Robert Crandall, Jie Xu, Peng Zhou, Marian George, Vipin Pillai, Mayank Bansal, Rama Chellappa

• **MultLFG: Training-free Multi-LoRA composition using Frequency-domain Guidance**

Aniket Roy, Maitreya Suin, **Ketul Shah**, Rama Chellappa

Peer-Reviewed Publications

- **VRAgent: Self-Refining Agent for Multimodal and Interactive Video Retrieval (WACV 2026)**
Ketul Shah, Pankaj Nathani, Rama Chellappa, Fabian Caba Heilbron
- **Diffuse2Adapt: Controlled Diffusion for Synthetic-to-Real Domain Adaptation (ICIP 2025, Oral Presentation)**
Ketul Shah, Arushi Sinha, Arun Reddy, Aniket Roy, Rama Chellappa
- **AeroGen: Ground-to-Air Generalization for Gesture Recognition (FG 2025)**
Ketul Shah, Anshul Shah, Arun Reddy, Aniket Roy, Arushi Sinha, Celso M. de Melo, Rama Chellappa
- **Multi-View Action Recognition using Contrastive Learning (WACV 2023, Oral Presentation)**
Ketul Shah, Anshul Shah, Chun Pong Lau, Celso M. de Melo, Rama Chellappa
- **Synthetic-to-Real Domain Adaptation for Action Recognition: A Dataset and Baseline Performances (ICRA 2023)**
Ketul Shah, Arun Reddy*, William Paul, Rohita Mocharla, Judy Hoffman, Kapil D. Katyal, Dinesh Manocha, Celso M. de Melo, Rama Chellappa*
- **Improved Modeling of 3D Shapes with Multi-view Depth Maps (3DV 2020, Oral Presentation)**
Ketul Shah, Kamal Gupta*, Susmija Jabbireddy*, Abhinav Shrivastava, Matthias Zwicker*
- **DiffNat: Improving Diffusion Image Quality Using Natural Image Statistics (TMLR 2025)**
Aniket Roy, Maitreya Suin, Anshul Shah, Ketul Shah, Jiang Liu, Rama Chellappa
- **Cap2Aug: Caption guided Image to Image data Augmentation (WACV 2025)**
Aniket Roy, Ketul Shah, Anshul Shah*, Anirban Roy, Rama Chellappa*
- **Unsupervised Video Domain Adaptation with Masked Pre-Training and Collaborative Self-Training (CVPR 2024)**
Arun Reddy, William Paul, Corban Rivera, Ketul Shah, Celso M de Melo, Rama Chellappa
- **HaLP: Hallucinating Latent Positives for Skeleton-based Self-Supervised Learning of Actions (CVPR 2023)**
Anshul Shah, Ketul Shah, Aniket Roy*, Shlok Mishra, David Jacobs, Anoop Cherian, Rama Chellappa*
- **FeLMi : Few shot Learning with hard Mixup (NeurIPS 2022)**
Aniket Roy, Anshul Shah, Ketul Shah, Prithviraj Dhar, Anoop Cherian, Rama Chellappa
- **Photorealistic Image Reconstruction from Hybrid Intensity and Event based Sensor**
Prasan A Shedligeri, Ketul Shah, Dhruv Kumar, Kaushik Mitra

Voluntary Service

- TPAMI, WACV 2026, ICCV 2025, AAAI 2025, CVPR 2024, WACV 2024, ICLR 2024, NeurIPS 2024, NeurIPS 2023, ICLR 2022, NeurIPS 2022, ECCV 2020

Teaching Experience

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| Machine Perception | Fall 2024, Fall 2022, Fall 2020 |
| • <i>Course Assistant</i> | <i>Johns Hopkins University</i> |
| Advanced Data Structures | Spring 2019 |
| • <i>Teaching Assistant</i> | <i>University of Maryland, College Park</i> |

Programming Skills

- **Libraries and Tools:** PyTorch, Amazon SageMaker, PyTorch Lightning, Weights & Biases, Tensorboard, Caffe, TensorFlow, OpenCV, Blender, AWS
- **Languages:** Python, C, C++, MATLAB, Java