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Profile

I am a third year PhD student at SVCL, UCSD working under Prof. Nuno Vasconcelos on computer vision problems focused on **multimodal generation, editing and reasoning**. My recent work presented at NeurIPS'24 is an efficient diffusion model framework ([project page](#)) that offers high prompt compliance, controllability, modularity, editing and applicability to multimodal generation. I have also worked on efficient prompting techniques for fine-grained editing and erasing of concepts in diffusion models ([project page](#)). Previously, I worked on fundamental problems such as efficient image classification and detection. I am actively seeking **internship opportunities** related to multimodal generation and understanding.

Education

PhD, Electrical and Computer Engineering, Generative Models University of California, San Diego, La Jolla, California	2022-2026 CGPA: 3.93/4
Master of Engineering, Electrical and Computer Engineering, Thesis McGill University, Montreal, Quebec	2016-2018 CGPA: 3.88/4
Bachelor of Technology, Instrumentation and Control Engineering National Institute of Technology Tiruchirappalli (NITT), India	2012 -2016 CGPA: 9.6/10

Research Interests

Diffusion Models, Controllable Multimodal Synthesis, Inversion and Editing, Personalization, Efficient Model architectures.

Selected Publications

[Google Scholar](#)

- D Sridhar, A Peri, R Rachala, N Vasconcelos, [Adapting Diffusion Models for Improved Prompt Compliance and Controllable Image Synthesis](#), NeurIPS 2024
- D Sridhar, N Vasconcelos [Prompt Sliders for Fine-Grained Control, Editing and Erasing of Concepts in Diffusion Models](#), ECCV Workshops, 2024
- Y Li, D Sridhar, H Liang, A Wong, [Spot the Difference! Temporal Coarse to Fine to Finer Difference Spotting for Action Recognition in Videos](#), ICME 2024
- D Sridhar, Y Li, N Vasconcelos [SCHEME: Scalable Channer Mixer for Vision Transformers](#), arXiv 2023
- D Sridhar, N Quader, S Muralidharan, Y Li, P Dai, J Lu, [Class Semantics-based Attention for Action Detection](#), ICCV 2021, 13739-13748

Professional Experience

Senior Computer Vision Research Engineer: May 2018-Aug 2022

Huawei Technologies Canada Co., Toronto, Ontario

- **Hand Pose Project** - Led a small group of research engineers to develop a real-time hand pose estimation engine that was deployed for Huawei Education Tools applications in Huawei Smart Lamp.
 - Designed the end-to-end model pipeline for detecting, classifying, and localizing the hand joints.
 - Achieved the accuracy requirement (< 20 MPJPE), size (~ 5 MB) and speed requirements (> 50 FPS) on mobile devices.
 - Designed a lightweight 3D hand joints and mesh estimation model (10% less FLOPs) that can run in real-time on low resource devices with competitive accuracy compared with large models. The architecture uses transformers as the learning head for joints and mesh prediction.
- **Smart TV Gesture Control Project** – Developed a tiny hand detection and hand classification model that surpassed the accuracy requirements ($> 95\%$ precision and $> 90\%$ recall) for detecting smart gestures such as swipe, drag and openhand. It runs under 15 ms/image speed on Huawei mobile devices. The models were successfully deployed in Huawei Smart TV launched in early 2020.

- **Action Detection** – Developed an action localization network that achieved second position in ActivityNet Challenge 2021/2022 Temporal Action Localization workshops held at CVPR’21, ‘22. Published a paper in ICCV’21 based on a novel attention mechanism that achieved state-of-the-art performance on action detection benchmarks – ActivityNetv1.3 and THUMOS14 datasets.

Skills

Programming: Python, Pytorch, TensorFlow, MATLAB, Caffe, C++, Java (Android), SQL

Software: Git, Visual Studio Code, Kubernetes, CI/CD, Docker, Pycharm, Android Studio, Microsoft Excel.

Academic Service

Reviewer: CVPR (’22, ’23, ’24), ECCV (’22, ’24), ICCV (’23), NeurIPS (’23, ’24), TNNLS (’20, ’21), TPAMI (’23)

Teaching Assistant: ECSE 500 Math Foundation of Systems, ECE 271A Statistical Learning, ECE 101 Linear Systems

US Patents Filed

Devices and methods for single or multi-user gesture detection using computer vision	Feb 2022
Systems and methods for video retrieval and grounding	Nov 2021
Devices and methods for gesture-based selection using machine vision	Aug 2021
Methods, devices, and computer readable media for training a keypoint estimation network using cgan-based data augmentation	May 2021
Systems, methods, and computer media for joint attention video processing	Mar 2021
Methods, devices, and media providing an integrated teacher-student system	Mar 2020

Awards

- Awarded **Outstanding Reviewer Award** at ECCV | 2024
- **Qualcomm Innovation Fellowship Finalist** | 2024
- Awarded **Graduate Student Service Award** by ECE department at UCSD | 2023
- Awarded **Jacobs Fellow Award** (highest recognition in ECE department at UCSD) | 2022
- Awarded **Outstanding Individual Award** for the year 2021 by Huawei Canada for leading a small team of research engineers to successfully deliver a project, publishing a top-tier conference paper and filing multiple patents | 2021
- Awarded **Toronto RC Director Award** by Huawei Canada for contribution in research of key projects | 2021
- Awarded the **Globalink Graduate Fellowship** of value 15000 CAD by Mitacs Inc. | 2016-2017.
- Awarded the **Graduate Excellence Fellowship** of value 7500 CAD by McGill University | 2016-2017.

Leadership and Volunteering

- **Community Assistant**, Graduate and Family Housing, UCSD, 2023 - 2024: Organized several programs (e.g., Diwali celebration, Writing retreat etc.) to build the graduate housing community to promote a sense of belonging.
- **PhD Representative** ECE Graduate Student Council (ECE GSC), UCSD, 2022 - Present: Organized 1st year PhD students’ happy hour, beach bonfire events where students socialize with food and drinks. Handled the communications and logistics aspects.
- **Vice President (Operations)** Electrical Engineering Graduate Students Society (EEGSS) Council, McGill University (2017-2018): Managed events such as Activity Night, EEGSS Holiday Lunch and conducted monthly meetings with EEGSS council members.
- **International Student Services Buddy Volunteer** (McGill University): Facilitated smooth transition of new International Students to McGill (2017-2018).
- **Head of Workshops** Sensors’16, a National Level Technical Symposium of ICE at NIT Trichy: Organized a series of Workshops on eclectic topics which include Electronics/Robotics, Design, and Software. (2015-2016).