Shrikant Arvavasu

📞 734-596-8050 ✉ shrikant.cvml@gmail.com 🔗 LinkedIn 🌐 Portfolio 📍 Ann Arbor, MI

Experience

University of Michigan, Laboratory of Dr. Hun-Seok Kim   Ann Arbor, MI
Research Assistant (Computer Vision and LiDAR Perception)   May 2023 - Dec 2025

- Developed a **temporal-sensor-fusion** pipeline using a transformer backbone to process NuScenes LiDAR scans and camera frames, combining past detected boxes with LiDAR points, simulating **real-time constraints** in autonomous vehicle setups.
- Designed experiments validating the applicability of several hypotheses in training 3D object detection models by incorporating known and unknown parameters in the experiment.
- Coordinated with a team of doctoral researchers and a professor and maintained a detailed record of all experiments, pitfalls and discussed improvements.
- Finetuned the state of the art BEVFusion for 3D bounding box detection by only utilizing **50%** of the lidar beams, achieving a mAP of 0.601 and NDS of 0.63 on **NuScenes dataset** using subsampled point clouds.
- Developed novel diffusion sampling algorithms for inverse imaging problems, enhancing the quality and fidelity of the samples of **latent diffusion models**, achieving an FID score of 37.2, **an improvement of 17.2%** over the baseline model.

Skylark Labs   Dover, DE
Machine Learning Intern (Representation Learning and Computer Vision)   June 2023 – August 2023

- Designed a caching mechanism using a pre-trained RegNet model to achieve a **recall of 65% in self-learning** new categories by storing **multi-scale quantized features** to recognize pre-trained classes.
- Improved the accuracy of the detector by 12% on detecting novel classes by training a detector with vector-quantized features.

SixSense Corporation   Jalan Besar, Singapore
Computer Vision Intern (Automatic Augmentation and Multiclass Classification)   January 2022 – April 2022

- Trained a stochastic automatic augmentation framework based on **Fast AutoAugment** on a ResNet50 model to techniques for CIFAR-100 and ImageNet.
- Improved the average accuracy of the detector model by 2.3% by integrating the AutoAugment as a plugin-augumentation module for the company's defect detection dataset.

Independent Projects

Autolabelling Driving Scenes in Cityscapes using DiNO and Segment Anything   November 2024

- Automated dataset labeling using Grounded-SAM, tuning parameters through extensive experiments involving data cleaning and pseudo labeling.
- Reported 0.26 mAP-mask on YOLOv11-Seg for semantic segmentation of road markings, validating the model's robustness under minimal manual supervision.
- Packaged a TensorRT-based C++ inference pipeline for road-marking segmentation, enabling optimized deployment on Jetson boards.

Translating Cartoon to Natural Images using Stable Diffusion   November 2023

- Implemented an image-to-image translation system from cartoon Tom and Jerry images to real cat and mouse images using diffusion models.
- Implemented a Stable Diffusion utilizing BLIP-based text guidance to translate cartoon images to real-like images, achieving an FID score of 46.32 comparing the real-ness of the images generated.

Block-Based Compressed Sensing for Natural Images and Videos   January 2023

- Innovated a block-based compressed sensing approach for natural images and videos, leveraging deep learning inspired by the insights from the paper "Video Compressed Sensing Using a Convolutional Neural Network."
- Trained the model and achieved a compression factor of 0.1 on non-keyframes of videos of KITTI Dataset.

Technical Skills

Languages/OS: Python, C, C++, Cuda, MATLAB, Shell Scripting, Linux, ROS
Developer Tools: OpenCV, SLURM, Git, Open3D, Docker
Machine Learning Tools: Pytorch, Pytorch-Lightning, MMDetection3D, Pandas, TensorRT
Technologies/Concepts: Deep Learning, Image Processing, Point Cloud Processing, 3D Computer Vision, Lidar-Voxel Algorithms, Sensor Fusion in AV systems, Generative AI, Diffusion Models

Education

University of Michigan   **Ann Arbor, Michigan**

Master of Science in Electrical and Computer Engineering   *2022 – 2024*
Specialization: Signal & Image Processing and Machine Learning   *GPA: 3.97/4.0*

National Institute of Technology Karnataka   **Karnataka, India**

Bachelor of Technology in Electronics and Communication Engineering   *2018 – 2022*
Honors: Machine Learning and Signal Processing   *GPA: 3.87/4.0*