Aditi Shanmugam

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Education

BMS Institute of Technology and Management   **August 2018 – July 2022**
Visveswaraya Technological University - B.E Electronics and Telecommunications   *Bangalore, Karnataka*

Technical Skills

Core Competencies: Deep Learning, Computer Vision, Image Processing, Data Visualization, Data Structures, Algorithms, Statistics

Programming Languages: Python, C++, LaTeX

Tools and Frameworks: Pytorch, Keras, TensorFlow, OpenCV, Git, ONNX, CUDA

Operating Systems: Linux, MacOS

Work Experience

Inferigence Quotient   **April 2022 – Present**
Computer Vision Engineer (July '22 - Present); Intern(April - July '22)   *Bangalore, India*
- Overlooking the development of an in-house image annotation tool and curation of custom datasets for deep learning projects and managing a team of 3 members.
- Integrating object tracking algorithms with custom-trained YoloV7 models for improved real-time object detection and tracking on jetson devices for real-time inference using CUDA, onnxruntime with C++.
- Responsible for development of an object detection and tracking pipeline to be deployed on Unmanned Aerial Vehicles using C++ for deployment on Jetson devices using OpenCV and Gstreamer.
- Developed utility modules and communication modules for data transfer over sockets, ethernet, serial port in C++ for UAVs.
- Contributed to development of pipelines to perform frame registration on images captured by UAVs to satellite images for geo location using C++, OpenCV.
- Modified and fine-tuned existing algorithms for template matching, sparse, and dense optic flow to achieve close to 100.0% frame registration in every test case. Delivered performance on a real-time system on HD video with latency below 500ms, and throughput of 25fps, on a moderate capacity GPU.

Visual Computing Lab, Indian Institute of Science (IISc)   **May 2021 – April 2022**
Research Intern   *Bangalore, India*
- Integrated superpixel masking and inpainting (SMAI) into a custom GAN and Autoencoder based network developed using Pytorch for anomaly detection and correction.
- Incorporated multi-exposure fusion for synthetic image enhancement into the pipeline to reduce artifacts produced in the generated images and achieve an overall accuracy of 80.0%.
- Contributed to the development of a novel framework to perform source-free multi-label domain adaptation (SF-MLDA) using Pytroch.
- Researched various techniques to tackle noise in training data and integrated the divide-mix algorithm into source-free multi-label domain adaptation (SF-MLDA) to improve accuracy by 7.0% .

Fellowship.ai   **January 2021 – April 2021**
Data Science Fellow   *Bangalore, India (Remote)*
- Developed an end-to-end functional application for zero-shot food detection present in an in-oven setting using the Contrastive Language-Image Pre-training model (CLIP) by OpenAI.
- Developed web scrapers to generate custom datasets by scraping food blogs, and Instagram using Scrapy and Selenium. Increased the size of the dataset using data augmentation techniques.
- Performed transfer learning on ResNet50 and ResNet101 networks to determine baseline results. Obtained a final Top-1 accuracy of 97.22% and Top-3 accuracy of 100.0% using a custom dataset containing only 16 images per class.