Anirudh Iyengar Kaniyar Narayana Iyengar

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Education

MS in Robotics and Autonomous Systems - AI **January 2023 – December 2024**
Arizona State University *Tempe, AZ*

- **Relevant Coursework**: *Artificial Intelligence, Data Visualization, Intro Digital Image Processing, Image Analytics & Informatics, Applied Linear Algebra, Perception in Robotics, Modeling and Control of Robots.*

B.Tech in Computer Science and Engineering **August 2016 – May 2020**
Dayananda Sagar University *Bengaluru, KA*

Technical Skills

Languages: Python, C, C++, SQL, HTML, MATLAB, Bash, R, CSS, Javascript, D3 js.
Frameworks: PyTorch, Docker, Kubernetes, Git, SciPy, PySpark, Scikit-Learn, OpenCV, mmdetection, NumPy, TensorFlow, Huggingfaces, mmsegmentation, VScode, Jupiter, Detectron2, Pandas, Open AI API.
Tools/Platforms: CVAT, Tableau, ClearML, NLTK, Jira, Jenkins,AWS Quick Sight, MySQL, AWS Sagemaker, AWS S3, SQLAlchemy, SQL server management studio, VScode, Jupyter, Git.

Experience

Synapse Labs **June 2024 - Present**
Machine Learning Engineer *Scottsdale, AZ*

- Automated an end-end pipeline for payment reconciliation using **OCR algorithms and LLMs by achieving 80% reconciliation rate.**
- Leveraged **EC2, S3, Quicksight, PySpark, SQLAlchemy** for processing 1 million data processing and visualization.
- Contributed dashboards towards presenting complex technical insights to drive strategic business outcomes.

JLiang Lab - Arizona State University **July 2023 - July 2024**
Research Aide and Teaching Assistant - Computer Vision *Tempe, AZ*

- Collaborated with **Valleywise Health** on deep learning models for lung disease zero-shot learning, localization, segmentation, long-tail classification, and regression with the **mmdetection** and **Detectron2** frameworks.
- Applied transfer learning and contrastive learning to achieve 9th position in the Long-Tail Classification challenge.
- Served as a *Teaching Assistant* for **CSE/BMI 591/BME 598: Image Analytics & Informatics (Spring 2024)** under Dr. Jianming Liang by advising and guiding students on advancements in medical image processing.

CAIR, DRDO Lab **January 2020 – May 2020**
Student Trainee - Computer Vision *Bengaluru, KA*

- Processed a total of 389 image pairs, including 194 training image pairs and 195 test image pairs of stereo image datasets for KITTI 2012, and KITTI 2015.
- Appraised GWC-Net a generative adversarial network(GAN) for depth estimation.
- Demonstrated the effectiveness of GWC-Net by improving the **5%** accuracy of real-time depth estimation on multiple datasets.

Projects

Integration of RAG with Open Source LLM and LangChain [*Python, PyTorch*] **March 2024 - April 2024**

- Accelerated data preparation by cleaning 50 deep learning papers, yielding precise text files for analysis.
- Employed **Qdrant** vector database and **BGE-large-en-v1.** embedding model in a pipeline, enhancing source generation accuracy by 2% with **LangChain and LLM (BERT) integration.**
- Optimized **RAG's** access to local vector database for seamless Q&A and research summary.

Sentiment Analysis Assisted Time Series Stock Prediction [*Python, PyTorch,SQL*] **Present**

- Hypothesized and currently developing an advanced stock prediction model using natural language processing to analyze financial news impact on stock movements precisely.
- Currently developing and incorporating LSTM and large language models (LLMs) for enhancing stock price forecasting.

Detection For Autonomous Driving using Argoversehd [*Python, PyTorch, ClearML*] **May 2023 - June 2023**

- Optimized object detection for autonomous driving scenarios leveraging the Argoversehd traffic dataset.
- Fine-tuned **YOLOv8** model for vehicles, persons, traffic signals, and road signs. Achieved a **1.5%** higher mean Average Precision (mAP) than the original Argoversehd implementation and visualized using **ClearML** tool.

Anytime Stereo Image Depth Estimation using KITTI2012 [*Python and PyTorch*] **January 2023 - April 2023**

- Engineered an innovative approach using a Unet model that incorporated a disparity network and residual map for each layer of the decoder, Improved the performance by **aggregating 2 decoders** in the model one after the other.
- Successfully predicted disparity images in real-time for each layer of the decoder, resulting in 5% performance better than the original implementation.