ASHMAL VAYANI

Computer Vision Engineer

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Highly motivated and result-oriented CV Engineer with diverse research experience in developing scalable products using cutting-edge Deep Learning methods in Visual Analytics. Proficient in real-time Video Analytics, Image Pre-Processing, Object Detection, and interdisciplinary domains of Vision, Data Science and Large Language Models.

EXPERIENCE

Data Scientist, VentureDive

📅 June 2023 – August 2023   📍 Karachi, Pakistan

- Designed an **Anomaly Detection** system using sentence transformer representations (RoBERTa-Large) followed by evaluation benchmarking with One-Class SVM and PyTorch pre-trained NLP classifiers.
- Built a POC for MAAS's **Time-Series Demand Forecasting** model on Azure Machine Learning platform using AutoML's Auto-Gluon and local-compute, saving the company's training cost on the cloud.
- Developed an unsupervised, model-free approach for **Video Activity Recognition** utilizing Facial Landmarks to detect Autism, achieved a 92% accuracy using the Coefficient of Variance metric.

Research Intern, iParhai

📅 September 2022 – December 2022   📍 Karachi, Pakistan

- Implemented GANs and VAEs to generate and validate synthetic data in a gaussian distribution.
- Built a personalized recommendation engine using DCT based on adaptable learning features extracted from data.
- Read literature on Graph Neural Networks and Graph Knowledge Tracing to find skill-to-skill dependencies and interactions.

Research Intern, Retrocausal

📅 June 2022 – September 2022   📍 Karachi, Pakistan

- Implemented a Handcrafted version of visual activity recognition using object detection and implanted rules for real-time task detection.
- Read and carried out research literature experiment of the Fusion Approach to combine object detection and activity recognition features in the 2D+3D CNN for improving accuracy.
- Trained open-source implementations of multiple 3D Convolutional Networks, LSTMs, and Transformer models

PROJECTS

Automated Gas Meter Reading, FYP - FAST

- We worked to replace legacy technology with advanced IOT-based Deep Learning where a meter reader manually records the reading, which is prone to error.
- Used advanced DL/ CV and morphological image processing methods. Currently, our accuracy is 94%.
- including Segmentation with Yolov5-v7, Vision Transformer, Bagging, Resnet50, EfficientNetB0-B6, LeNet, Transfer Learning, morphological image preprocessing, and OCR techniques

Electricity Theft Detection, Personal

- Achieved 89% accuracy on customer dataset using KMeans-SMOTE preprocessing and implementing DL models such as GRU, MLP, BiLSTM, and RNN and hybrid models such as BiGRU-BiLSTM, CNN-LSTM, and MLP-GRU.

EDUCATION

Bachelor's of Science in Computer Science

National University of Computer and Emerging Sciences - FAST

📅 Aug 2019 – Jun 2023   CGPA:3.99/4.00

COURSES:

- Deep Learning and Perception
- Fundamentals of Computer Vision
- Embedded Artificial Intelligence
- Artificial Intelligence
- Probability and Statistics

SKILLS

C/C++   Python   CUDA   PyTorch   TensorFlow   AWS   SQL   Git/ GitLab   OpenCV   DeepChecks   Scikit-Learn   DL/CV   Flask   FastAI   AutoML   Java   RDBMS   Azure ML   LSH

CERTIFICATION

- IBM Data Science Professional Certificate.
- Deep Learning Specialization.
- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning.
- Data Science Track - Google Developers Student Club, NUCES.

ACHIEVEMENTS

- Rector's List - 1st Position (Fall 2020 - Fall 2023) / Deans list (Fall 2019).
- Computer Science Competitions Head - Procom'2023.
- Secured 1st Position in a Database Design competition in Procom (2022).
- Programming Fundamentals Student Lab Assistant at NUCES FAST (Fall 2021, Fall 2022).
- Secured 7th position out of 150 in Speed Programming (2019).
- Database Design Co-Head at Developer's Day FAST.