

Ashish Roopan

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AI Developer with over 3 years of experience with a strong background in Mathematics, Computer Vision, and Deep Learning. Adept at crafting innovative solutions for 3D and real-time applications, and employing AI to address complex challenges and yield significant results. Currently pursuing B.S. in Data Science from IIT Madras.

Education

B.S. in Data Science and Applications	 IIT Madras	2023 – Present
B.Tech in Electronics and Instrumentation	 College of Engineering Trivandrum	June 2016 - June 2020

Work Experience

Computer Vision Engineer | Cevo Technology Pvt. Ltd., Bangalore June 2023 - Present

- Developed a robust and lightweight video monitoring system consisting of face recognition, people detection, tracking etc. from surveillance cameras and deployed on Nvidia Jetson Nano after doing optimizations like int8 quantization, pruning, sparsity etc.

Computer Vision Engineer | FirstSense Technologies, Bangalore Mar 2022 - June 2023

- Facilitated immersive and engaging virtual interactions through the development of a **3D avatar-based conferencing platform**.
- Enhanced the learning experience in online/hybrid classes by improving the video quality of whiteboards and eliminating teacher occlusion.
- Provided an affordable **depth-sensing solution** with a custom-built stereo camera system, making depth-based applications more accessible.
- Improved online class monitoring by accurately identifying user gaze and screen location, ensuring better student engagement and learning outcomes.

Systems Engineer | TCS, Kochi Oct 2020 - Mar 2022

- Developed a transformer-based model to analyze sentiment on Twitter feeds, quantifying customer responses and providing valuable insights into the client's product performance.
- Designed and delivered an efficient ETL pipeline using PySpark and HIVE in Python and BASH to manage 400+ SAP tables in the client's EDL, automating updates in response to changes in the original SAP tables, streamlining data management and enhancing overall efficiency.

Computer Vision Intern | Neuroplex, Trivandrum June 2019 - Aug 2019

- Designed an LSTM-based video classifier for action recognition in CCTV footage from petrol stations; contributed to an edge ecosystem deployed in over 40 Indian Oil petrol stations nationwide.

Skills

Programing: Python, C, C++, BASH, JavaScript

Frameworks and Tools: Pytorch, TensorflowJS, Pytorch 3D, TensorRT, Nvidia TAO, Gstreamer, Deepstream, Tflite, Blender, Pyrender, OpenCv, ONNX, pySpark, HIVE

Publications

Comparative study on Neural Vocoders for Multi-speaker Text-To-Speech Synthesis.

JAN 2021 IEEE

Projects

3D Avatar Creation from Single RGB Image: Developed a cutting-edge software that generates fully-rigged, customizable 3D avatars from just one RGB image, complete with a variety of outfit and hairstyle options. The avatars are capable of real-time animation, accurately capturing and mirroring user actions and facial expressions as they interact via webcam.

Stack: 3D Head Reconstruction, Texture Completion, Pytorch, openCV, TensorflowJS, ThreeJS, ONNX, Blender.

Supermarket Analytics and Slot Machine Monitoring: Devised a multifaceted analytics solution addressing slot machine blockage, customer count, heatmap generation, and demographic/gaze analysis. Utilized pose detection, age-gender detection, gaze estimation and other analytics to optimize store operations, layout, and marketing strategies based on customer insights.

Stack : Pytorch, OpenCv, TensorRT

Innovative Custom Stereo Camera Solution: Engineered a unique stereo camera system using two high- distortion CCTV cameras, and devised a bespoke algorithm capable of measuring human depth up to 15 meters. The custom algorithm incorporates a DETR-based pose estimation network for pose identification, bipartite matching, and disparity map

calculations for every individual in the frame. This inventive approach demonstrates the potential to transform commodity hardware into advanced depth-sensing tools.

Stack : Python, OpenCV, Pytorch, bipartite matching, DETR

White Board enhancement and teacher subtraction: Conceived and executed a groundbreaking algorithm to elevate the visual clarity of whiteboards in virtual classrooms while seamlessly eliminating teacher obstructions. This inventive solution played a pivotal role in the development of our cutting-edge online class platform.

Stack: Pytorch, openCV, ONNX etc.