Viraj Hapaliya

Software Engineer

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virajhapaliya

Education

2016-2020
Bachleor of Engineering
Electronics and Communication
Gujarat Technological University

Expertise

- Python
- Machine Learning
- Deep Learning
- Django RESTful API
- Jetson Devices

Language

English

Hindi

Gujarati

Experience

Amenity Technologies

08/2020 - Present
Software Engineer

- Custom Person detection and tracking
  - Train person detection model using normal, 90 degree and fisheye camera's.
  - Implemented tracking algorithm with detection model. Using tracking algorithm counted the person inside the frame.
  - Counted person going outside the store, coming inside the store and total person visited the store.
  - Generated the heatmap based on person in the frame area
  - Converted the whole project to work for intel system using openvino toolkit.
  - Implemented the age and gender model along with detection model
  - Deployed whole project in edge device jetson nano(Nvidia developer kit). Achieved the 15-18 fps in single live RTSP stream
  - **Knowledge Gained** : Deepstream SDK, Yolov4, Gstreamer, Jetson nano, OpenVino
- 3D Skeleton Activity Recognition(R&D)
  - This was r&d project. Based on 3D data of the skeleton using autoencoder we have to predict the activity of the skeleton(Running, Walking).
  - For this project we have implemented the neural network architecture from different research paper and blogs.
  - Worked on data manipulation using numpy. Used method like PCA, TSN-E for the data visualization.
  - **Knowledge Gained** : OpenCV, Numpy, Pandas, Matplotlib, Autoencoder, 3D data handling, PCA, TSN-e, Tenosrflow, keras, Custom CNN
- Nurse Calling System
  - Nurse calling system is product of amenity technologies where wireless switch is connected to patient's bed and hub monitor is at nurse station.
  - In this project, I have developed the hub's GUI using PyQt5 and for the switch I have written the Embedded c.
  - Developed the logic to connect hub and switch wirelessly.
  - For the hub created a single executable file for linux arm deployment.
  - **Knowledge Gained** : Embedded C, PyQt5, Mqtt, Pyinstaller, Linux
- Roof Fault Detection And API development
  - Train AI model using Drone images to identify the fault on roofs.
  - Created User management, Upload photos and AI integrations APIs using Django RESTful API.
  - Deployed the project in AWS EC2 and database in AWS RDS.
  - Trained the AI model in AWS's Rekognition Service.
  - Generated the custom PDF using photos, AI results.
  - **Knowledge Gained** : Django REST API, Django Template, OpenCV, Custom PDF, Yolo, AWS EC2, AWS S3, AWS Rekognition Service, Posegress SQL, AWS RDS

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Experience

- Pose Estimation Annotation tool
  - In this project, created a application using PyQt5 and pose estimation model. Where you can select image and video as input and generate annotation for the same.
  - You can update the annotations and push this changes in server from GUI.
  - created a single executable file for this project.
  - **Knowledge Gained** : PyQt5, PyQt5 Designer, Pyinstaller, Mediapipe Pose estimation model

- ANPR Detection
  - Train the ANPR model using state of the art method. Task was to detect the Indian number plate and fetch number plate data.
  - Created the demo web application using streamlit and created another demo using flask.
  - **Knowledge Gained** : OpenCV, Yolo, Streamlit, Flask, OCR

- Amenity R&D
  - I have done R&D for different project and clients.
  - Worked on intel's realsense D415 camera for 3D reconstruction and point cloud generation.
  - Explore the Open3D library and GUI in Jetson device for 3D reconstruction.
  - Worked on Tello drone camera view capturing and controlling using python script.
  - R&D on 3D live measurement using ZED SDK.
  - Using ZED2 camera, worked on depth images, 3D object detection and 3D pose estimation.
  - Integrated the 3D object detection and 3D pose estimation in single OpenGL window.
  - deployed the whole ZED project in Jetson Xavier(Nvidia Toolkit)
  - Using Mavic drone's footage trained person detection model, social distance maintenance and mask detection.
  - Trained custom object detection model using TensorFlow object detection API.
  - Written Embedded C program for hardware like ESP32, ESP8266, ESP01, Raspberry pi and Banana Pi.
  - **Knowledge Gained** : OpenCV, librealsense, Open3D, ZED SDK, OpenGL, Yolo, Tello SDK,TensorFlow object detection API, Raspberry pi, Banana Pi

Silver Touch Technology

01/2020 - 07/2020

Trainee Engineer

- Projects
  - Worked on Age detection using custom cnn architecture.
  - Collected data from websites and blogs for the corana fact check. Train Custom model for the fact check.
  - IMDB movie review analysis project, Collected the 50k Raw data and trained sentiment analysis model.
  - **Knowledge Gained** : Custom CNN, Tensorflow, keras, scikit learn, Matplotlib, opencv, nltk