Udbhav Saxena

(650)-303-6085 | udbhav.saxena@gmail.com | linkedin.com/in/udbhav-saxena | Buffalo, New York

EDUCATION

University at Buffalo, SUNY, Buffalo, New York ***Aug 2021 – Feb 2023 (expected)***

Master's in Engineering Science with Specialization in Machine Learning and Artificial Intelligence

Shiv Nadar University, Greater Noida, India ***July 2017 – July 2021***

Bachelor's in Mechanical Engineering

SKILLS/RELEVANT COURSES

- Python (Tensorflow, Keras, Pytorch, Scipy, Scikit-learn, Matplotlib, Seaborn, Numpy, Pandas, Gensim, NTLK, OpenCV), SQL, MATLAB, R, Power BI, C/C++, Git, Linux, Docker, Flask, REST APIs
- Data Structures and Algorithms, Robotics Algorithms, Computer Vision, Convolutional Neural Networks, Machine Learning, Deep Learning

WORK EXPERIENCE

Volvo Group NA, Greensboro, NC, U.S.A. ***May 2022 - Present***

Intern (Co-op): Artificial Intelligence/Machine Learning

- Implemented and automated a recommendation system for reductions of parts from the master database to clear the database based on a logic diagram provided by the manufacturing engineers, connected the program to a UI for an interactive and intuitive dashboard using Tkinter – the business value being cleaning of the database and reduction of unwanted parts by 20%
- Leveraging classification techniques, predicted the type of packaging using variables like weight, quantity, and demand to optimize floor space, implemented and trained an XGBoost Classifier and Random Forest Classifier for the same with an accuracy of 80% and 85% respectively- B/C ratio of 6 – saving $350,000, implementation cost $54,000
- Predicting the number of trucks that will go into float and that will go into fulltime through using time-series analysis models such as Random Forest, XGBoost, Auto Regressive models (ARIMA/SARIMA), and Long-Short Term Memory (LSTMs) – with a confidence interval of plus or minus 5 trucks everyday which facilitates the manufacturing manager to make educated decisions for labor requirement everyday
- Industrializing UR10e cobot at the gear and shaft area to reduce human effort and maximize efficiency and potentially avoiding any hazards using YOLO algorithm for object detection – retrieved data for parts and camera using IIoT software ThingWorkx

Honda Cars, Greater Noida, India ***May 2019 – Aug 2019***

Project Intern

- Worked with Honda's Engine Assembly Line. Streamlined different autonomous systems for assembly of the engine
- Led a team of 10 to rectify mechanical shortcomings of the existing robotic manipulator
- Project: Designed an end effector (3DoF) for Honda Civic – Continuous Variable Transmission Engine Block

ACADEMIC PROJECTS

Sign Language Detection using LSTMs ***May 2022***

- Implemented a sign language recognition model using LSTMs, can decipher the action in real time to text
- Vocabulary length for the model was 10 ASL signs, 30 frames were extracted for training the model for each word, used Mediapipe for extracting features from hands – Achieved an accuracy of 97%

Fingertip Segmentation using You Only Look Once (Yolo) ***May 2022***

- Implemented the YOLO algorithm to segment the fingertip from images. Trained the model on 50 images, trained it for about 5.67 hours
- Achieved an accuracy of 71.67% on the test data provided by the professor
- For training data, 50 custom images were used in different orientations and lighting conditions

Image Stitching, Image Processing, Morphology ***November 2021***

- Used SIFT Detector to find key points, used RANSAC to find outliers and inliers to calculate Homography and warp the image and stich them together
- Applied median filter on the image to remove salt and pepper noise, and using convolution operation, detected the edges of the image in different directions

U-Net Architecture for Semantic Segmentation using TensorFlow ***November 2021***

- Implemented the U-Net architecture for semantic segmentation from scratch on nuclei Kaggle dataset
- Merged different segmented masks into one mask for training purposes by superimposing the mask images
- Customized the architecture that would run efficiently and achieved an accuracy of 92% with the segmented image