Praveen Paidi

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https://github.com/PraveenPaidi

Determined and technically shrewd Robotics Master Student with bachelor's in mechanical engineering equipped with 2 years of industry expertise and looking for internship and full-time opportunities.

EDUCATION

Masters of Science in Robotics and Autonomous systems **- Expected May 2024**
Arizona State University, Tempe, Arizona CGPA: 4.0/4.0

Bachelor of Technology in Mechanical Engineering **2016 - 2020**
National Institute of Technology Jalandhar, Punjab, India CGPA: 7.52/10

SKILLS & SOFTWARES

- Python, C/C++, Pytorch, TensorFlow, ROS, Machine Learning, Slam, LINUX, Open CV, Arduino, Deep learning,
- CATIA V5, Solid Works, Auto CAD, UGNX, Puma, MS office, concerto, INCA, ETAS, MATLAB, Kinematics, gazebo, Simulink.

PROJECTS

Imbalanced dataset (Statistical Machine Learning): **Aug 2022-Dec 2022**

- Built Machine learning algorithms such as Linear regression, Logistic regression, K Means, Naive Bayes, Gaussian Distribution, Perceptron, SVM, decision trees, Adaboost, Gradient Boost, XG Boost, random forest, and Neural Networks from scratch.
- Applied Lasso, sparse, Coordinate descent, Gradient descent, and Stochastic gradient descent from with different algorithm from base.
- Induced Boosting technique for imbalanced dataset of Wi-Fi dataset, defected glass datasets for better F1-score of 0.85.
- Compared F1 score, Accuracy, G means of Adaboost, Gradient Boosting and logistic regression performance on the datasets.
- Implemented all ML algorithms on MNIST and CIFAR 10 dataset using the statistical approach without using Canny algorithms.

SVM for Vehicle Classification: **Aug 2022- Dec 2022**

- Recognition of Vehicle in the image and extracting as interest points using SIFT for the training data.
- Used Bag of words to represent the features of the image.
- Implemented SVM to train the models to classify the vehicle model and the logo.

Student Prediction Kaggle project:(Dataset of 60000 samples with 31 features) **Jan 2023 – Apr 2023**

- Performed feature engineering and generated heat maps to find the best features to develop algorithm**.**
- Implemented XG Boost, SVM, Neural Networks and Logistic regression to find the best F1 score of 0.71 on testing dataset.
- Compared performance time and F1 score for the dataset and implemented hyper parameter tuning along with K means.

Edge detection and panorama: **Jan 2023 – Apr 2023**

- Implemented Probability edge detection algorithm from scratch resulting better than canny and Sobel detectors.
- Implemented Deep learning techniques along with Adam Algorithm for the better accuracy over the training dataset.
- Detected corners using Harris corners and stitched images and created panorama of image using the concept of disparity.
- Performed the tasks using the classical state of art and deep learning as well.

Turtle Bot 4: **Jan 2023 – Apr 2023**

- Developed Neural Network for the feature generation for the identification of the face mask in the image frame.
- Implemented Adam algorithm as the loss function to get accuracy of 85% on the test dataset.
- Developed dataset using Stereo camera and compared results by implementing YOLO for the image classification.
- Real time face mask detection using Deep neural network using OAK D camera.(https://praveenpaidi.github.io/Robotics_Deployment/)
- Developed ROS nodes for movement of bot towards goal and topic and custom message publication and subscription.
- Experimented with computer vision techniques by creating dataset using stereo camera of turtlebot.
- Collected IMU data and implemented Kalman filter and FIR filter for the velocity and acceleration prediction.
- Implemented line follower using the computer vision thresholding, mapped surrounding environment using bot.

Baja SAE India: **July 2017-Jan 2020**

- Managed to develop timer by LDR and Laser setup for calculation of vehicle acceleration with the Arduino RS 232.
- Simulated CVT in MATLAB for optimal acceleration by reducing lag of 0.5 sec and validated specifications of CVT for different terrains.
- Implemented MATLAB code and technically validated flyweights and variables of CVT for different terrain by physical testing.
- Designed and fabricated a gearbox, CVT, driveline of ATV using FEA analysis (Ansys) and decreased rotational weight by 20%.
- Fabrication, assembly, and disassembly of powertrain components of ATV for 3 years and cut down collaborative service time by 30%.
- Selected manufacturing materials based upon CAE analysis, thermal properties, and feasibility in VMC and CNC machines.

WORK EXPERIENCE

Assistant Manager in Engineering R&D I Suzuki MotoCorp - Maruti Suzuki India Ltd I **July 2020 to July 2022**

- Developed Automation tests for the Engine validation using VBA and python in PUMA alongside Bosch AVL Team.
- Developed real time test data generation in AVL concerto and Measured data analysis for the IC Engines.
- Performed Measured Data Analysis for debugging and automating new test algorithms in ECU and test frame via CAN and ETK.
- Measured length by rotary encoders and calibrated to Arduino code to deliver tested products with budget cut by 40% for customer needs by benchmarking market specifications. Experience of working in small team(startup).
- Conducted engine performance testing and analysis using engine dynamometers and other testing equipment.
- Root Cause Analysis for testing data, design parts and collaborated with cross functional team for prototypes.
- Designed Jigs, fixtures, and spare parts in UGNX for the testing purpose and optimized equipment for better insulated testing.