JUGAL KRISHNA KAKARLA

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EDUCATION

University of Southern California, Los Angeles **JANUARY 2021-PRESENT**
Master of Science in Electrical Engineering (Machine Learning and Data Science) (**M.S HONORS**) ***GPA (4.0/4.0)***
Gandhi Institute of Technology and Management, India **JUNE 2016-MAY 2020**
Bachelor of Technology in Electronics and Communication Engineering ***CGPA (8.68/10)***

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, SQL, R, C, C++
Libraries: Pytorch, Tensorflow, Numpy, Scikit learn, SPSS Modeler, OpenCV, Pandas

WORK EXPERIENCE

Grader and Course producer - EE503, Viterbi school of engineering (USC), Los Angeles. **JANUARY 2021-PRESENT**

- Produced simulations and demos for Naive Bayes, Logistic regression, PCA, etc. with R and Python, and designed and graded assignments, quizzes, and exams for course - Probability for Electrical and Computer Engineers (EE503) with Prof. Brandon Franzke.

Grader - EE364 and EE141L, Viterbi school of engineering (USC), Los Angeles. **AUGUST 2021-DECEMBER 2021**

- Graded assignments, quizzes, and exams for courses - Introduction to Probability (EE364) with Prof. George Papavassilopoulous and Applied Linear Algebra Engineering (EE141L) with Prof. Antonio Ortega.

Summer Intern, Quest Solutions, India. **MAY 2019-JULY 2019**

- Led a group of four other interns to design an automation robot equipped with an ultrasonic sensor for obstacle detection, controlled and operated with Bluetooth by implementing the code using Arduino.

ACADEMIC PROJECTS

Object detection with Faster RCNN and RETINANET from Detectron2 library

- Performed object detection on PASCAL VOC dataset using Faster RCNN and RetinaNET architectures from the Detectron2 library.
- Achieved an increase in the AP50 value of over 30% in Faster RCNN over RETINANET.

Semantic Segmentation of images with FCN-32 and FCN-16 implemented using RESNET-18

- Implemented FCN-32 and FCN-16 by extracting features from RESNET-18 CNN architecture, and increasing their spatial resolution using Transpose Convolution and upsampling layers to perform semantic segmentation of images from the KITTI dataset on PyTorch.
- Accomplished an overall improvement in the mean IOU of over 6% in FCN-16 over FCN-32.

Debiased deep learning facial recognition model utilizing Debiasing Variable Autoencoders (DB-VAEs)

- Developed a face detection model using the Convolutional Neural Networks and reduced bias in the dataset by learning latent variables underlying faces using Debiasing Variable Autoencoders (DB-VAEs) and executed it on Tensorflow.
- Achieved an overall improvement in accuracy of over 10% in recognizing under-represented data of test data set with bias over the traditional convolutional neural network.

Image classification using Vision Transformer

- Implemented the Vision transformer by coding the patch embeddings, Multihead-attention, transformer encoder blocks from scratch and performed image classification on the CIFAR-100 dataset and achieved an accuracy of 40% on the test dataset after training the model for 75 epochs.

Image colorization using RESNET-18

- Devised an image colorization model to convert images from Gray scale to RGB by upsampling the high-level features obtained from RESNET-18 model using upsampling and Transpose Convolution, and realized it on Pytorch on a custom dataset consisting of over 4400 images and attained an RMSE of 0.003.

Reinforcement learning to design self-driving car

- Built a self-driving agent based on RESNET-50 architecture and simulated it on the VISTA environment using Tensorflow, and retained 91.4% of accumulated discounted rewards of 650 on evaluation mode from training mode, after training the model for 50 steps.

Music Prediction using LSTM

- Built a deep learning model to predict next keynotes for a song using the LSTM and implemented it on Tensorflow.

Image detection using SIFT algorithm with RANSAC

- Executed the SIFT algorithm with RANSAC to detect given objects in given target images on OpenCV and computed the corresponding homography matrices.

CERTIFICATIONS

Machine Learning & AI: Advanced Decision Trees (Credential id: AfZ5pKH4YO6nxxMGc2cNeH44V_NU)

- Learned implementing the decision trees using IBM SPSS modeler