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Objective

- Actively looking for Internship opportunities for roles such as Machine Learning Engineer, Computer Vision Engineer, Data Scientist, Data Analyst and SDE roles.

EDUCATION

Master of Science , Electrical and Computer Engineering The Pennsylvania State University	<i>Aug 2021 - May 2023</i> GPA: 3.78
B.Tech , Electronics and Communication Engineering Amrita Vishwa Vidyapeetham	<i>Jul 2016 - Apr 2020</i> GPA: 8.69

SKILLS

Languages: Python, C++, MATLAB, R, Html, Javascript, MySQL, MongoDB

Libraries: Pandas, SciPy, Jupyter, Keras, Tensorflow, Pytorch, Scikit-learn, Numpy, GGPlot2

Visualization : Excel Charts, Matplotlib, Seaborn, Tableau

EXPERIENCE

Graduate Research Assistant, The Pennsylvania State University *Dec 2021 - Present*

- Worked on finding lower bounds on cross-entropy loss for binary class problems in the presence of test adversaries. Developed a custom algorithm that achieves 1000x speed-up by exploiting the bi-partite graph structure and it enables the computation of lower bounds in a vast range of settings.
- Applied the algorithm to Fashion MNIST dataset and achieved cross-entropy loss :0.45 using ResNet-18 ,which is close to the optimal loss for Fashion MNIST dataset with adversaries.
- Currently working on finding lower bounds on cross-entropy loss for multi-class problems in the presence of adversaries.

Junior Machine Learning Engineer, Omdena

Feb 2021 - Jun 2021

- Collaborated in the Omdena AI challenge with impact startup Origin Chain Network.
- Created a new dataset for the problem using Sentinel 2 data and QGIS software.
- Built Computer Vision models for farming habitat classification for classifying commercial crops and peripheral habitats on farm that can be used by food industry bodies to contextualize on-farm data that is self-reported by farmers.

PROJECTS

Analysis of Deep Learning Algorithms for Plant Leaf Disease Detection

- Various deep learning algorithms such as VGG-19 , ResNet-50, AlexNet were analysed for tomato leaf disease detection problem.
- Data Augmentation technique is implemented to overcome the overfitting problem and achieve an increase in the number of training images from 10k images to 40k images.
- Used various performance metrics such as Accuracy , F1-score and ROC score to compare the models. Achieved best ROC score: 0.91 for the ResNet-50 model.

Facebook Friend Recommendation

- Given a directed social graph, have to predict missing links to recommend users (Link Prediction in graph).
- Used Feature Engineering like the number of followers, page rank, katz score, adar index, some SVD features of adjacent matrix and some weight features to increase the accuracy.
- Used several Machine Learning Algorithms and increased F1 score of the best model from 0.76 to 0.92 using feature engineering.

Modularized Workplace Safety Monitoring (Finalists of OpenCV Spatial AI competition 2021)

- Designed a safety protocol module such as Pose Estimation and Face Mask detector module.
- Introduced a highly accurate real-time technique that can efficiently detect people not wearing masks.
- Used MobileNet architecture to increase the accuracy to 99 percent of the face mask detector and used Googles BlazePose architecture for pose estimation , it detects 33 key points from the body with 87.5 % accuracy.

Location Estimation in a 2D Environment using Radio Frequency Identification Tags

- Used ZigBee Modules to collect the tag number and RSSI value, needed to evaluate the accurate location; used trilateration algorithm to find the unknown coordinates of the tag.
- Used Supervised Learning algorithms such as KNN and SVM algorithms to improve the accuracy and also used Artificial Neural Network(ANN) to further improve the accuracy and achieved best accuracy score: 93%. Also experimentally showed that ANN algorithm was effective in tackling nonlinear changes in radio frequency signals.

PUBLICATIONS

- Analysis of Machine Learning Algorithms for RFID Based 2D Indoor Localization**