ADITYA RAO

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EDUCATION

University of Southern California, Los Angeles Aug 2022-May 2024
Master of Science, Electrical Engineering **GPA - 3.68/4.0**
Relevant Coursework: Machine Learning 1: Supervised methods, Introduction to Deep Learning, Algorithms in C++, Probability for Electrical and Computer Engineers, Linear Algebra for Engineering, Database Systems

Veermata Jijabai Technological Institute (VJTI), Mumbai Aug 2018-May 2022
Bachelor of Technology, Electronics Engineering **GPA - 8.86/10.0**
Relevant Coursework: Data Structures and Algorithms, C++, Python, Image and Video Processing, Data Science, Neural Networks and Fuzzy Systems, Natural Language Processing, Microcomputer System Design, Digital Signal Processing

SKILLS

Programming Skills	Python, Dart, Java, C, C++, SQL, Javascript, Swift, HTML, CSS
Technical Skills	Docker, Kubernetes, Git, MongoDB, PostgreSQL, GCP, AWS, Azure, MLOps, Tableau
Frameworks	PyTorch, PyTorch Lightning, TensorFlow, Keras, JAX, Scikit-learn, Django, Flask, Numpy Pandas, NodeJS, React, Flutter, LLMs, HuggingFace, LangChain

EXPERIENCE

Graduate Research Assistant | **ACME Lab USC,** Los Angeles, USA June 2023-Dec 2023

- Implemented an 8-coil-based Human Activity Recognition model using the Berkeley MHAD Dataset, optimizing and normalizing data with data reduction and scaling techniques, demonstrating proficiency in handling complex datasets.
- Developed sophisticated LSTM network models in PyTorch for temporal analysis in HAR. Enhanced the models with bidirectional layers and regularization, leading to marked improvements in activity recognition.

Project Intern | **IoT lab Veermata Jijabai Technological Institute,** India Aug 2021-May 2022

- Orchestrated the adoption of Deep Q-Learning, an advanced reinforcement learning technique, to enable independent learning and adaptation of an intelligent vehicle within its environment.
- Applied MDP, a stochastic control framework, to formulate intricate decision processes in unpredictable scenarios, facilitating informed state transitions.
- Led a 4-member team in optimizing Q-Learning with experience replay for enhanced policy development while utilizing PyTorch for neural network implementation and integrating Kivy for dynamic visualizations to enhance the learning experience and user interaction.

Machine Learning Intern | **Indian Institute of Technology,** India Aug 2021-May 2022

- Leveraged NLP techniques with CountVectorizer and TF-IDF methods to analyze news headlines for stock price prediction, attaining 85.44% accuracy using Random Forest, SVM, and Decision Tree algorithms.
- Applied Time Series Forecasting approaches, including Moving Average and LSTM models on various equity data attributes (Open, Close, High, Low), attaining an RMSE value of 4.735 for accurate prediction.

PROJECTS

Credit Card Default | *Github Link*

- Developed payment default prediction models using logistic regression, SVM, and XGBoost in Python. Achieved a test accuracy of 76.4% and 86% cross-validation accuracy with hyperparameter optimization via grid search for XGBoost, while employing dimensionality reduction like PCA and LDA, and data augmentation techniques such as SMOTE to address class imbalance.

Anime Face Generator | *Github Link*

- Successfully generated anime faces with exceptional detail and quality using a 64-bit latent size in a DCGAN (Generative Adversarial Networks) implemented with the PyTorch framework.
- Deployed the model in a Streamlit web application, enabling users to interactively create anime faces. Additionally, implemented visualization features to display loss curves of the discriminator and generator, along with score curves for real and fake images, enhancing the user's understanding of the model's performance and training process.

Food Vision | *Github Link*

- Developed an efficient transfer learning model to classify 101 foods, surpassing the performance reported in the Food101 paper. Successfully achieved an impressive 77.23% accuracy by training an EfficientNetB0 model with optimized data preprocessing, batch handling, mixed precision, feature extraction, fine-tuning, and real-time monitoring through TensorBoard.