# ADITYA RAO

Los Angeles, CA · (213) 512-7124 · adityarao2110@gmail.com · Portfolio · LinkedIn · GitHub

## EDUCATION

**University of Southern California (USC),** USA      Aug 2022 - May 2024
**Master of Science in Electrical Engineering (Machine Learning and Data Science), GPA: 3.68/4.0**
- ***Relevant Coursework:*** *Machine Learning I: Supervised Methods, Introduction to Deep Learning, Algorithms in C++, Probability for Computer Engineers, Linear Algebra for Engineering, Database Systems, 3D Vision.*

**Veermata Jijabai Technological Institute (VJTI),** India      Jul 2018 - Jun 2022
**Bachelor of Technology in Electronics Engineering, GPA: 8.86/10**
- ***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 & OTHER

**Programming Languages:** Python, R, C++, SQL, Javascript, Swift, HTML, CSS
**DevOps and Database Management:** Docker, Kubernetes, Git, MongoDB, PostgreSQL
**Cloud and Operations:** GCP, AWS, Azure, MLOps, Tableau
**Machine Learning and Web Frameworks:** PyTorch, PyTorch Lightning, Tensorflow, Keras, JAX, scikit-learn, Django, Flask, Numpy, Pandas, LLM, HuggingFace, LangChain, OpenCV

## PROFESSIONAL EXPERIENCE

**ACME Lab**      Jun 2023 - Dec 2023
**Machine Learning Research Assistant (Python, MATLAB, PyTorch)**
- Developed LSTM model in PyTorch for HAR, improving accuracy with bidirectional layers and regularization techniques.
- Employed Python, Numpy, and Pandas for data normalization and reduction in complex HAR datasets.
- Streamlined model training processes with PyTorch Lightning, boosting performance and scalability of temporal analysis.

**VJTI**      Aug 2021 - Apr 2022
**Deep Learning Engineer Intern (Python, Kivy, PyTorch, Neural Networks)**
- Implemented Deep Q-Learning with PyTorch to improve autonomous vehicle decision-making capabilities by 15% via MDPs.
- Led a team of 4 engineers to refine Q-Learning with experience replay techniques, boosting policy development by 20%.
- Utilized PyTorch for neural networks for core AI functionalities and Kivy for dynamic UI visualizations in vehicle projects.
- Applied Docker for environment management, ensuring consistent deployment of neural network models.

**Rishabh Instruments Private Limited**      Jun 2021 - Dec 2021
**Data Engineer Intern (Python, SQL, Airflow, PowerBI, AWS)**
- Designed real-time dashboards in Power BI, unveiling key KPIs and trends which improved decision-making processes.
- Automated ETL from SAP/SharePoint to RedShift through DAG scripts on Airflow, reducing manual work by 10 hrs weekly.
- Enhanced SQL data querying on large datasets, reducing data discrepancy resolutions by 7% in sandbox-to-prod transitions
- Leveraged Python and Pandas to perform structured data analysis, improving the accuracy and speed of data processing.
- Configured Docker containers for consistent deployment of data pipelines, reducing setup times, thereby increasing overall operational efficiency.

**Indian Institute of Technology**      Jun 2021 - Jul 2021
**Machine Learning Intern (Python, scikit-learn, Numpy, Pandas)**
- Gained 85% accuracy in stock prediction using NLP (CountVectorizer and TF-IDF) with scikit-learn, Random Forest, and SVM.
- Reduced RMSE to 4.735 in equity market forecasting using Python, Numpy, and Pandas alongside LSTM models.
- Implemented feature extraction methods using CountVectorizer and TF-IDF in Python for better financial news analysis.
- Built and tested various ML models with Python and scikit-learn for market trends analysis to support investments decisions.

## PROJECTS

**Structure From Motion** | *Python, NumPy, OpenCV, Matplotlib, 3D Reconstruction*
- Engineered a Structure from Motion (SFM) algorithm using Python, NumPy, OpenCV, and Matplotlib to accurately reconstruct 3D scenes from 2D images, achieving critical advancements in feature detection and camera pose estimation.

**Reddit Data Pipeline Engineering** | *Reddit API, Docker Containerization, Apache Airflow & Celery ETL, AWS Integration*
- Elevated a Reddit data extraction and ETL pipeline with Docker, Airflow, and AWS, improving data storage, management, and reporting efficiency by 40%, utilizing Amazon S3, Glue, and an optimized Redshift cluster for data handling.

**Credit Card Default** | *Python, Matplotlib, NumPy, Machine Learning, Scikit-learn, Seaborn*
- Developed a credit card default prediction model in Python with Scikit-learn, reaching a test accuracy of 76.4% and 86% cross-validation accuracy; refined model performance with PCA, LDA, and SMOTE to address class imbalance.

**Anime Face Generator** | *Python, Deep Learning, GAN, PyTorch, Streamlit, Matplotlib*
- Created a DCGAN model for anime face generation in PyTorch, deployed via Streamlit, achieving dynamic user interaction with real-time loss curve visualizations and accuracy assessments between generated and actual images.