RAVISANKAR CHENGANNAGARI

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SUMMARY

Machine Learning Engineer with experience designing end-to-end ML pipelines, predictive modeling, and deploying models using Docker and Flask. Skilled in NLP, deep learning, feature engineering, with hands-on project work in credit scoring, sentiment analysis, and air quality forecasting. Strong foundation in scalable ML systems, supported by academic training and certifications in AI and Data Science.

SKILLS

Machine Learning & AI: *TensorFlow, Scikit-learn, XGBoost, LightGBM, NLP, CNNs, RNNs, Predictive Modeling, Feature Engineering, Hyperparameter Tuning*
MLOps & Deployment: *Docker, MLFlow, Flask, FastAPI, Streamlit*
Big Data & Tools: *Hadoop, Spark, SQL, ETL Pipelines*
Data Analytics: *Statistics, Probability, Time Series Forecasting, Bayesian Inference, PCA, Hypothesis Testing*
Programming: *Python, R, Java, JavaScript*
Visualization: *Matplotlib, Seaborn, Plotly, Folium*
Other Skills: *Data Structures, HTML, CSS, Git, GitHub*

EXPERIENCE

Cognizant Technology Solutions: *Programmer Analyst* ***June 2022 – November 2023***
Bengaluru, Karnataka, India

- Designed and deployed end-to-end machine learning pipelines including data ingestion, preprocessing, feature engineering, model training, and deployment into production.
- Developed predictive models (classification, regression, and time series forecasting) using scikit-learn, XGBoost, and TensorFlow, achieving up to 20-30% improvement in prediction accuracy.
- Automated ETL workflows for large-scale datasets, enabling real-time model retraining and reducing manual intervention by 40%.
- Conducted hyperparameter tuning, cross-validation, and feature selection to optimize models for scalability and performance.
- Deployed ML models via Flask/Flask API and containerized solutions using Docker, improving deployment reliability and scalability.
- Collaborated with cross-functional teams to integrate ML-driven insights into business dashboards, accelerating data-driven decision-making.

Cognizant Technology Solutions: *Intern* ***January 2022 – June 2022***
Remote

- Implemented proof-of-concept ML models for structured and unstructured data to demonstrate predictive analytics capabilities.
- Applied feature engineering techniques (missing value imputation, categorical encoding, scaling, text preprocessing) to improve model accuracy.
- Built exploratory EDA reports with Matplotlib, Seaborn, and Pandas to identify data patterns and driven feature selection.
- Assisted in developing sentiment analysis and recommendation system prototypes using NLP and collaborative techniques.
- Gained hands-on experience with Supervised learning algorithms and their evaluation metrics.

ADDITIONAL EXPERIENCE

Mercy University: *Student Teaching Assistant* ***Feb 2025 – Present***
Dobbs Ferry, New York, United States

- Assist students in mastering core Python, Java, and Data Structures concepts across both Spring and Fall semesters, including OOP, data structures, and algorithms.
- Provide one-on-one debugging support during Spring (Python/Java) and Fall (Data Structures) courses, helping students resolve coding issues and strengthen logical problem-solving skills.
- Support the Data Structures course (Fall 2025) by clarifying complex topics, guiding students through assignments, and facilitating understanding of algorithms.
- Grade programming assignments in both semester and provide detailed feedback to help students improve code efficiency, readability, and accuracy.

ACADEMIC & INDEPENDENT ML PROJECTS

Personalized News Recommendation System | LINK **Nov *2025***

- Designed and built a personalized news recommendation system using the large-scale Microsoft News Dataset (MIND) to predict user click behavior.

- Parsed and preprocessed 5.8 million raw user-item interactions , implementing a chronological 80/20 train-test split to realistically simulate production-level forecasting.
- Developed and compared a popularity-based baseline , a content-based filter (TF-IDF, Cosine Similarity) , and a collaborative filtering model (SVD).
- Evaluated all models using ranking metrics (AUC, MAP, NDCG@10), providing the SVD model's superior predictive performance with a 0.546 AUC.

Emotion Classification in Twitter Messages | LINK ***Oct 2025***

- Developed an end-to-end NLP system to classify text into six emotion categories (Joy, Sadness, etc.) using a large Twitter dataset.
- Performed comprehensive data cleaning, preprocessing (including lemmatization and handling negations), and exploratory data analysis.
- Trained and evaluated multiple models: Naive Bayes, Logistic Regression, SVM, Simple RNN, LSTM, and Bidirectional LSTM.
- Achieved a top accuracy of ~94% using a Bidirectional LSTM, demonstrating the superiority of context-aware deep learning models over traditional methods for this task.
- Analyzed model failures (e.g., exploding gradients in basic RNNs) and conducted detailed error analysis on the best model to understand its limitations with semantic overlap.
- Deployed the final model as an interactive, multi-page web application using Flask, allowing real-time emotion prediction.
- Utilized Python, Pandas, NLTK, Scikit-learn, TensorFlow, Keras, Matplotlib, Seaborn, Git, and GitHub.

Credit Approval Prediction | LINK ***May 2025***

- Built a fully reproducible, end-to-end ML pipeline using Kaggle's credit-history datasets.
- Conducted data cleaning, EDA, and advanced feature engineering (e.g., age transformation, log-income scaling, occupation imputation).
- Solved a severe class imbalance issue (8% approval rate) by implementing SMOTE oversampling.
- Trained and optimized a LightGBM classifier.
- Achieved a strong performance of approximately 0.85 ROC-AUC on held-out data.
- Generated comprehensive evaluation reports, including performance metrics and confusion matrices.

Sentiment Analysis Using Machine Learning Algorithms | LINK ***December 2024***

- Built a complete sentiment classification pipeline using a 50,000-record IMDB review dataset.
- Applied a full range of NLP preprocessing techniques, including tokenization, stemming, and stop word removal.
- Used dimensionality reduction methods (PCA and SVD) to improve model performance and efficiency.
- Trained and evaluated multiple machine learning models (Naive Bayes, SVM, Random Forest), achieving 86% accuracy—a 15% improvement over the baseline.
- Deployed the final model into an interactive Python dashboard to demonstrate real-time sentiment analysis.

Air Quality Analysis Using Machine Learning | LINK ***September 2024***

- Analyzed 100K+ air quality records (NO2, PM2.5) from NYC and global datasets.
- Developed Random Forest model achieving 85% forecasting accuracy (MSE < 0.02).
- Created geospatial pollution heatmaps using Plotly and Folium to identify hotspots across 50+ locations.

Health Data Analysis Using NHANES Dataset | LINK **March 2024**

- Conducted statistical analysis on 10K+ health records using R (ggplot2, dplyr, mice).
- Identified trends in BMI and creatinine levels, performing regression and t-tests to validate hypotheses.
- Delivered actionable health insights for age-specific wellness planning.

EDUCATION

Mercy University, New York, US
Master of Science in Computer Science (Specialization: Machine Learning) ***Expected December 2025***
Coursework: Machine Learning, Natural Language Processing, Big Data, Computational Data Analysis, Math Methods, Database Management Systems, Object Oriented Programming

Lovely Professional University, Punjab, India
Bachelor of Technology in Computer Science and Engineering (Specialization: Data Science) ***August 2022***
Coursework: Machine Learning Algorithms, Convolution Neural Network, Recurrent Neural Network, Data Science & Analytics, Big Data Technologies, Data Visualization, Python, Java

CERTIFICATIONS

- Artificial Intelligence Engineer — *Simplilearn* | CERTIFICATE
- Machine Learning — *Simplilearn* | CERTIFICATE
- Deep Learning with TensorFlow — *IBM* | CERTIFICATE
- Data Science with Python — *Simplilearn* | CERTIFICATE
- Competitive Programming — *Cipher Schools* | CERTIFICATE