Narasimha Reddy Machha
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EDUCATION

University of North Texas, Denton, Texas 08/2023-05/2025
Master of Science in Artificial Intelligence GPA:3.5/4.0
DVR & Dr. HS MIC College of Technology, India 06/2018-08/2022
Bachelor of Technology in Electrical and Electronics Engineering GPA:3.5/4.0

SKILLS

- **Technical Skills:**
  -Generative AI
  -Windows, Linux
  - GenAI &NLP: Prompt engineering, sentiment analysis, real-time scoring, Gradio demos
  -Data Engineering: ETL pipelines, Data ingestion/cleansing, Data modeling, Schema design, Pipeline monitoring.
  -Machine Learning: Supervised & Unsupervised ML, model calibration, experiment tracking, GCP
  -Programming: Python (NumPy, Pandas, Tensorflow), C, Java, SQL, PySpark, Bash.
  -Cloud Platforms: AWS, basic Azure (Portal, IAM), GCP, Snowflake
  -Libraries & Databases: PyTorch, Hugging Face Transformers, NLTK, OpenCV, SQL, HTML
  -Microsoft Office suite: Microsoft Word, Excel, PowerPoint, Outlook
  -Monitoring & Logging: CloudWatch, Heroku logs, custom latency dashboards
  -Skills: Data preprocessing, Model calibration, Experiment tracking, Data Entry, Report Writing.
  - Data Visualization & BI: Matplotlib, Seaborn, Tableau, Power BI, VS Code
  -CI/CD Tools: GitHub, Jenkins
  -Verbal &Written communication
  -Supervised a team of engineers across different functions

EXPERIENCE

Internship (APSSDC, Andhra Pradesh, India) 01/2022-05/2022
Embedded Systems Intern

- Developed and evaluated embedded C firmware for 8051-based microcontrollers using the Keil uVision (C51), implementing sensor data acquisition and control logic for Arduino-style prototypes. Circuit schematics were designed, simulated, and debugged in Proteus to guarantee precise timing and dependable sensor-driven system functioning.
- Worked on a Smart Car Parking project with HC-SR04 ultrasonic sensors on an Arduino, optimizing calibration to achieve 95% detection accuracy and built obstacle detection algorithms, performed iterative firmware debugging and optimized sensor calibrations for precise vehicle detection.
- Constructed detailed technical documentation, such as test results, code annotations, and system architectu ral diagrams, which improved team knowledge transfer and simplified further development.

Web Developer (Creators Touch, Andhra Pradesh, India) 08/2022-06/2023
Junior Web Developer

- Designed and managed a MySQL database schema, written optimized SQL queries for data retrieval, reporting and basic CRUD operations. Created automated data ingestion pipelines with python scripts to import and clean CSV files from clients which led to reduced manual data prep time by 75%.
- Built interactive dashboards using Plotly Dash, helping clients to explore sales and user metrics through simple interfaces. Provided level 1 support for data pipeline issues with 99% uptime, diagnosing failures via logs and applying hotfixes within SLAs.
- Deployed and maintained applications on Heroku using Git and supported post deployment assistance, log checking using Heroku dashboard and python to solve any issues quickly.
- Integrated NLTK based sentiment classifier into the client dashboard to auto tag customer feedback which provides immediate insights to the marketing teams.

Assistant (MIC College of Technology, India) 08/2019 –05/2021

- Coordinated and managed a team of 6 students in designing and deploying AI enhanced electrical monitoring systems for three campus buildings, integrated voltage sensors and developed Random Forest, SVM models achieving 90% fault detection accuracy which improved the system uptime by 20%.
- Designed and simulated power distribution and control circuits in MATLAB, developed end-to-end ML data pipelines in Python to preprocess and label sensor datasets which reduced model training by 30%.
- Responsible for project management combining AI and electronics research, monitored component budgets and inventory for the experiments conducted during research and implemented process optimizations that resulted in a 15% reduction in setup time and a 10% reduction in material waste. Finally, I submitted technical reports and presentations to faculty for future improvements.

ACADEMIC PROJECTS

Music Genre Classification using CNN & Mel-spectrograms (Capstone Project):

- Utilized the GTZAN dataset and developed preprocessing pipelines in python to manage missing files and balance classes. Converted the audio files to Mel-spectrograms and extracted frequency, time-domain features. Then, we applied log-Mel transformation, gaussian smoothing and edge detection to enrich model inputs.
- Designed and trained a CNN model on raw and feature engineering spectrograms in TensorFlow which achieved 96.5% test accuracy and 57% validation accuracy surpassing standard CNN and Random Forest baseline models.
- Evaluated the model with metrics like accuracy, precision, recall and deployed the CNN model via a Gradio web interface for real-time predictions. Prepared and presented detailed performance reports and visualizations of the model.

Automated Essay Grading System:

- Engineered a feature extraction pipeline over 1805 essays generating a comprehensive input dataset by calculating rubric signals like causal clauses, transitional phrases and core linguistic metrics like word count, sentence count, passive voice count etc.
- Combined extracted features with human assigned Domain 1 scores and split the dataset into 80/20 for training and testing to ensure robust model validation.
- Conducted OLS regression analyses ($p < 0.05$) to identify the most significant linguistic predictors, informing feature selection and model interpretability. Built a Gradio demo for real-time scoring and delivered an Excel report comparing model vs. human ratings.

Sentiment Analysis

- Led a 4-member team to create and deploy a real time sentiment classification model which categorizes the text into positive, negative, and neutral classes. Built end to end processing and feature engineering workflows in scikit-learn, experimented with SVM, Naïve Bayes, and MutlinomialNB algorithms.
- Conducted hyperparameter tuning (GridSearchCV) and recursive feature elimination which improved the model's accuracy from 71% to 86%.
- The results and representations were provided via interactive dashboards, informing the product feedback strategies.

COURSE WORK

Machine Learning, Deep Learning, Big data, Data Mining, Data Modelling, Software Development for AI, Natural Language Processing, Feature Engineering, Embedded Systems, Empirical Analysis, Computer Vision, Statistical Learning, Cloud Computing Fundamentals, AWS Cloud Architecture, Computer Networks, Data Structures & Algorithms, Database Systems (SQL), Python.

AREA OF INTERESTS

- Cloud Computing & Infrastructure
- Natural Language Processing and Transformer Models
- Machine Learning
- Deep Learning
- Computer Vision & Image Processing

CERTIFICATIONS/TRAININGS

- Amazon web services
- Internet Of Things (IOT) Workshop by IIT Hyderabad
- Build Box Game Development Workshop by APSSDC
- Coursera: Deep Learning Specialization by Andrew Ng
- AWS Certified Solutions Architect – Associate