Pavan Kancharla

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Education

Arizona State University, Tempe, Arizona **January 2024 - December 2025**
Master of Science in Data Science, Analytics and Engineering *CGPA: 3.78/4.0*

JNTUH University College of Engineering Jagitial **August 2019 - June 2023**
Bachelor of Technology in Electronics and Communication Engineering *India*

Experience

Legitbytes IT Services LLP **July 2023 - December 2023**
Development Engineer *Ajitgarh, India*

- Developed interactive data query system using JavaScript, Langchain, and ChatGPT API to enable natural language interactions with SQL databases, reducing query response time by 60% and improving user experience.
- Built automated ETL data pipelines with AWS Lambda, R, and AWS Glue to streamline data cleansing, transformation, and embedding generation, achieving 40% improvement in data processing throughput for MySQL database integration
- Designed and deployed scalable microservices architecture using Docker containerization and AWS ECS orchestration to optimize deployment pipelines and enhance system scalability and reliability
- Implemented RAG (Retrieval Augmented Generation) architecture with PineconeDB for efficient storage and retrieval of data embeddings, enabling fast similarity searches and supporting AI-powered question-answering workflows

Cyberoi Systems **May 2022 - December 2022**
Backend Development Intern *Punjab, India*

- Architected and developed scalable RESTful APIs and WebSocket interfaces using Node.js and Express.js for a food delivery platform, integrating seamlessly with React frontend to enable real-time order tracking and user interactions
- Engineered containerized microservices deployment pipeline using Docker and AWS ECS, resulting in improved application scalability and 40% faster deployment cycles for the production food delivery platform
- Implemented comprehensive AWS cloud infrastructure utilizing EC2 for compute resources, S3 for static asset storage, Lambda for serverless functions, DynamoDB for NoSQL data management, and CloudFront for global content delivery
- Optimized backend performance and reliability through MERN stack implementation, achieving enhanced API response times and establishing robust database connections for handling high-volume food ordering transactions

Projects

Bitcoin Price Prediction Using Deep Learning and Blockchain Analytics **Paper**

- Published research paper "A deep learning-based cryptocurrency price prediction model that uses on-chain data" in Juni Khyat Journal (UGC Care Group I Listed Journal) and developed SAM-LSTM architecture achieving 86.94% accuracy with MAE of 0.3462 and RMSE of 0.5035
- Implemented change point detection (CPD) algorithm with PELT method for time-series data segmentation and normalization, enabling robust price prediction performance in previously unobserved price ranges and extreme volatility
- Built end-to-end machine learning pipeline comparing multiple algorithms including LSTM, Linear Regression, Lasso Regression, Ridge Regression, XGBoost, and Voting Regression, with complete data preprocessing, model training, and web-based prediction interface

Multimodal Music Sentiment Analysis **GitHub**

- Developed and implemented a comprehensive sentiment analysis system using GPT-4o-mini, LSTM networks, and BART-fusion architecture to analyze music across lyrics, audio, and user interpretation modalities, achieving robust emotion classification across 8 distinct categories (Happy, Sad, Angry, Fear, Dark, Tense, Chaotic, Deceptive)
- Designed and trained a dual-path neural network with 256-unit LSTM layers for temporal pattern analysis and fully connected layers for emotional feature processing, utilizing mel spectrograms and 22 statistical measures to extract valence, arousal, and intensity from 109,000+ songs in the Music4All dataset
- Processed and analyzed 27,834 songs with 490,000 user interpretations using OpenAI API integration, achieving 25.47% dataset matching accuracy through metadata-based algorithms, and trained models on ASU's Sol supercomputer using CUDA acceleration with optimized batch processing and early stopping techniques

Technical Skills

Languages: Python, Java, C, C++, HTML/CSS, JavaScript, SQL, MATLAB, R
Cloud & DevOps: AWS (Lambda, Glue, ECS, EC2, S3, DynamoDB, CloudFront, API Gateway), Docker, ETL Pipelines, Microservices Architecture
Frameworks & Libraries: Node.js, Express.js, React, MongoDB, Flask, Langchain, PyTorch, TensorFlow