VENKATA RAMANA REDDY DUGGEMPUDI

716-970-9622 | ramanareddy1098@outlook.com | LinkedIn | Github | United States

TECHNICAL SKILLS

AI for Medicine Specialization, Data Science with Python.

Programming: Python, JavaScript, Java, MATLAB, SQL.
Frameworks: TensorFlow, PyTorch, Keras, NLTK, Scikit-learn, Pandas, Matplotlib, LangChain, Hugging face.
AI Expertise: GAN, CNN, Transformers, Object Detection, OpenCV, LLMs, RAG, Gen AI, Agentic AI, Vector Database.
Tools & Technologies: HTML, CSS, Data Analytics, Tableau, ETL, Git, Spark, AWS, Docker, MongoDB.
Applied Mathematics: Calculus, Probability, Statistics, Linear algebra.
Emerging Skills: Prompt Engineering, AI Workflow Integration.
Skills: Problem Solving, Decision Making, Critical Thinking, Strategic Thinking, Collaboration.

WORK EXPERIENCE

Research Assistant - University at Buffalo, *Mar 2025 - Present*

- Developed an Agentic AI model to extract and retrieve structured information from Clinical Trial Reports (CTRs), improving data accessibility and analysis for research purposes.
- Built a judge system with 6 metrics to evaluate and validate the quality of retrieved information, enhancing the accuracy and reliability of data processing workflows.

Machine Learning Engineer - Order Appetit, NY US *Aug 2024 - Jan 2025*

- Engineered an NLP driven chatbot utilizing Retrieval Augmented Generation *(RAG)* to streamline MongoDB querying, providing stakeholders with real-time insights.
- Developed a modular multi-agent system using CrewAI to streamline query generation, analyze the data and get actionable insights for user friendly interaction.
- Corrected over 10,000 product naming inconsistencies using semantic similarity models, improving data accuracy by 95% and boosting trustability in system-generated analytics.
- Analyzed actionable insights across 500+ restaurants, uncovering performance metrics, user behavior patterns, and order trends to drive data-driven strategic decisions.

PROJECTS

LLMs in Health Science | *LLMs, Medical AI, Logistic Regression.* *Jan 2024 – May 2024*

- Fine-tuned MedBERT, MedRoBERTa, and Longformer to develop a language model, assisting doctors in obtaining secondary opinion and making decisions more clearly based on health reports.
- Optimized an ensemble model with logistic regression, achieving Faithfulness (50%) and Consistency (55%) metrics for enhanced reliability.
- Secured 14th place on CodaLab by employing advanced fine-tuning strategies to optimize model effectiveness.

Bone fracture detection | *YOLO, Vision Transformers, Object Detection, Classification.* *Jan 2024 – May 2024*

- Implemented a deep learning pipeline to identify 6 fracture types in X-ray images, achieving 20.75% mean Average Precision (mAP) on 4,000+ images, surpassing benchmark performance (20.6% mAP).
- Enhanced model generalization through dataset augmentation and applied state-of-the-art detection models, including Detection Transformers, YOLO, and Faster R-CNN, reducing the model loss to 0.68.

Obesity Prediction | *KNN, Naive Bayes, SVM, Random Forest, Multi-class Prediction.* *Aug 2023 – Dec 2023*

- Created a model to classify obesity into seven categories using feature engineering and feature selection.
- Neural networks achieved 95% accuracy as compared to other Machine Learning models.
- Developed basic UI by using flask which is user friendly.

Improving Chess Strategies with Deep RL Method | *DQN, MCTS, A3C* *Aug 2023 – Dec 2023*

- Designed and implemented reinforcement learning agents (DQN, A3C, and MCTS) in the PettingZoo chess environment.
- Trained over 1,000 episodes of self-play and inter-agent interactions to optimize strategic decision-making.
- Created comprehensive visual representations of core performance metrics tracking over 1,000 self-play episodes allowing precise comparison between different algorithms like DQN versus MCTS leading towards informed enhancements.

EDUCATION

University at Buffalo, The State University of New York Buffalo, NY
MS in Engineering Science (Artificial Intelligence) *Aug 2023 - Jan 2025*
Hindustan Institute of Technology and Science Chennai, India
Bachelor of Technology in Automobile Engineering *Aug 2018 - May 2022*