PHANINDRA TUPAKULA

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EDUCATION

University of Maryland College Park **Aug 2024 – May 2026**
Master of Science Applied Machine Learning

National Institute of Technology Jamshedpur **Sep 2020 – May 2024**
Bachelor of Science Computer Science and Engineering

SKILLS

Programming Languages: Python, Java, C , JavaScript, HTML, CSS, ReactJS, NodeJS, Springboot
Machine Learning and Data Science Frameworks: Scikit-learn, TensorFlow, Keras, PyTorch, NLTK, OpenCV
Data Analysis and Visualization: Matplotlib, Seaborn, Microsoft Excel, Power BI, Exploratory Data Analysis(EDA), StatsModels
Database Technologies: SQL, MongoDB
Software Development and Version Control: Git, GitHub, CI/CD Pipelines
DevOps and Deployment Tools: Docker, Kubernetes, AWS

Experience

Research Assistant **Jan 2025 – Present**
UMD

- Designing a 3D virtual try-on application using computer vision and generative AI to eliminate the need for physical dressing rooms, reducing time-to-purchase by 40% in simulated environments.

Quantitative Trading Analyst **Jan 2024 – Jul 2024**
Futures First

- Developed and deployed ARIMA and SARIMA models for time series forecasting in financial trading, optimizing risk-adjusted returns by 20%.
- Formulated a robust Shanghai crude trading strategy using the Vector Autoregression Model (VAR), achieving a 75% success rate during the testing phases.
- Built a dynamic web application with node.js as backend to assess market data seasonality, enhancing financial market insights by 25% through data-driven visualizations.
- Developed and optimized portfolio construction models using Efficient Frontier theory, improving investment allocation efficiency by 15%.

Machine Learning Intern **May 2023 – Jul 2023**
Critical River INC

- Engineered an ML-powered signature verification system for a banking client, leveraging CNNs and custom features like pressure points to enhance fraud detection. Annotated cheque images to extract signature boxes for model training, improving signature validation accuracy by 9%.
- Developed a Retrieval-Augmented Generation (RAG)-based NLP chatbot using vector search and Transformer-based embeddings, enhancing query accuracy for mechanical troubleshooting.
- Utilized NLP techniques for text extraction, preprocessing, and entity recognition, improving OCR-based document processing for financial applications, including signature verification and fraud detection.

Teaching Assistant **Apr 2022 – May 2023**
NXT Wave

- Mentored 70 students in programming and web development, resulting in a 40% increase in their technical proficiency.
- Facilitated learning sessions, solving 90% of technical issues within the first 10 minutes and significantly boosting classroom efficiency.

Projects

Code Companion – AI-Powered Coding Assistant

- Designed and developed a Spring Boot & React.js platform where LLMs generate dynamic, personalized coding hints based on users' solutions. Implemented GPT API with fine-tuning for adaptive, level-wise guidance. Built a robust backend to manage APIs, user interactions, and question storage, enabling real-time, context-aware assistance and interactive Q&A during coding.

Skin Cancer Detection (Published)

- Published a research paper on skin cancer detection, leveraging deep learning custom CNN architecture for accurate image classification. Applied SMOTE for class balancing and data augmentation, achieving a 15% increase in classification accuracy. Optimized training with early stopping and learning rate scheduling, leading to a final F1-score of 92% on benchmark datasets.