Aravilli Atchuta Ram

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Education

PES University Bangalore, India

Bachelor of Technology in Computer Science & Engineering; GPA - 9.23/10.00 *December 2021 – June 2025*

Capstone Project: Sector-Specific Stock Recommender Systems (Publication Index [6])

Developed a hybrid system combining a deep learning forecasting model and a fine-tuned large language model for recommending sector-specific stocks.

Research Interests

- TrustworthyAI - Explainable AI, AI Safety
- Reinforcement Learning

Conferences and Publications

1. Aravilli Atchuta Ram. **From Vision to Action: Enabling Real-World Agentic VLMs** *VLM4RWD@NeurIPS2025*

2. Aravilli Atchuta Ram. **Constrained Decoding for Privacy-Preserving LLM Inference** *ResponsibleFM@NeurIPS 2025*

3. Aravilli Atchuta Ram, Sandarbh Yadav, Yelleti Vivek, and Vadlamani Ravi. **Deep reinforcement learning for financial forecasting in static and streaming cases**. ***Journal of Information & Knowledge Management***, 23(06): 2450080, 2024, World Scientific. DOI: 10.1142/S0219649224500801

4. Pranay Gopi, Aravilli Atchuta Ram, Ksnvk Gangadhar, and Vadlamani Ravi. **Classification of Anti-Money Laundering Schemes in Blockchain Networks via Graph Convolution Neural Network based Hybrids**. In *International Conference on Data Management, Analytics & Innovation* (pp. 163-179). Singapore: Springer Nature Singapore. **[Won Best Paper Award]**

5. Chilukuri Divyasree, Aravilli Atchuta Ram, and Vadlamani Ravi. **Explainable and Interpretable Isolation Forest for Banking and Finance**. *International Conference on Data Management, Analytics & Innovation (ICDMAI 2025)*. Proceedings to be published by Springer Nature, Germany. **[Won Best Paper Award]**

6. Shah, Jay Mintu, Avani Dhagam, Aryan Wadhwa, Aravilli Atchuta Ram, and R. Bharathi. **Recommender Systems for Sector-Specific Stock Analysis**. In *2025 IEEE 14th International Conference on Communication Systems and Network Technologies (CSNT)*, pp. 868–872. IEEE, 2025.

Research Experience

Deep Reinforcement Learning for Financial Forecasting (Pub Index [3]) IDRBT, Hyderabad, India

Supervisor: Prof. Ravi Vadlamani May 2023 – August 2023

Description:

- Investigated reinforcement learning approaches (DDPG, PPO, RDPG) for stock market forecasting, benchmarking against baseline ML models (MLP, SVR, GRNN).
- Designed and implemented a Spark Streaming framework with sliding-window forecasting for real-time financial time series analysis.
- Achieved state-of-the-art results: DDPG excelled in static forecasting and GRNN in streaming; findings validated using SMAPE, DS, Theil's U, and Diebold–Mariano tests.

AML Classification in Blockchain via GCN Hybrids (Pub Index [4]) IDRBT, Hyderabad, India
Supervisor: Prof. Ravi Vadlamani February 2024 – June 2024
Description:

- Tackled the problem of classifying Anti-Money Laundering (AML) schemes in blockchain transaction networks using deep learning.
- Developed hybrid models combining Graph Convolutional Networks (GCNs) with three neural architectures: Probabilistic NN (PNN), Wavelet NN (WNN), and Radial Basis Functional NN (RBFN).
- Evaluated performance on the benchmark Elliptic dataset, achieving superior detection accuracy compared to stand-alone GCN baselines from recent literature.

Explainable and Interpretable Isolation Forest (Pub Index [5]) IDRBT, Hyderabad, India
Supervisor: Prof. Ravi Vadlamani June 2024 – August 2024
Description:

- Addressed the dual challenge of anomaly detection by enhancing both accuracy and interpretability in high-risk financial domains.
- Proposed a hybrid model integrating **Isolation Forest** with **Decision Trees**, combining efficient anomaly identification with rule-based explanations.
- Demonstrated strong detection performance across multiple datasets, while extracted rules provided human-interpretable insights into anomaly causes.

Sector-Specific Stock Recommender Systems (Pub Index [6]) PES University, Bengaluru, India
Supervisor: Prof. Bharathi R February 2024 – December 2024
Description:

- Designed forecasting models integrating multimodal financial signals (market news, earnings reports, temporal trends, and forecasts) to enable real-time stock price prediction.
- Fine-tuned **Llama-3.1-8B-Instruct** with QLoRA on a curated financial news corpus to generate sector-specific stock recommendations.
- Proposed a hybrid framework combining price forecasting, sentiment analysis, and performance indicators to derive *Buy/Sell* decisions, with superior outcomes observed in the consumer cyclical and healthcare sectors.

Research Innovation Visa Inc., Bengaluru, India
July 2024 – August 2024
Systems and Methods for Large-scale Data Integrity Verification Utilizing Historical Payments Transaction Data

- Proposed *Samata*, novel solution to verify data integrity across replicated databases.
- Generates contextual embeddings from the provided data and leverages UMAP clustering to assess data inconsistencies.
- Work was formally recognized by Visa's IP Committee through a **Technical Innovation Award** for originality and impact.

Research Innovation Visa Inc., Bengaluru, India
July 2025 – September 2025
Systems and Methods for Agent-Driven Challenger-Champion Model Generation and Selection

- Proposed *PratiYodha*, a generative-AI agent for the complete automation of the champion-challenger MLOps lifecycle.
- Agent is triggered automatically on data/concept drift to perform data discovery, feature engineering and auto-code multiple challenger models
- The contribution was acknowledged by Visa's IP Committee as a **Technical Innovation**, underscoring its novelty and business impact.

Invited Talks & Workshops

- **Privacy-Preserving Machine Learning**
  Talk on privacy risks, PETs, and Gen-AI privacy at CoDMAV, PES University. [Slides]
- **Hands-on Session: Federated Learning (Flower Framework)**
  Delivered a practical demo for undergrad students at CoDMAV, PES University.

Work Experience

VISA Inc. Bangalore, India

Software Engineer July 2025 – Present

- Developing a proof-of-concept (POC) using **supervised machine learning** techniques for automated calibration of ISO 8583 data elements.
- Identifying misconfigured data elements responsible for transaction failures and unnecessary declines.

Semester Intern January 2025 – June 2025

- Designed and prototyped ***RCA Copilot***, a multi-agent system with specialized agents for code search, metric analysis, and incident pattern mining.
- Collaborated with senior engineers to demonstrate feasibility for automated incident triaging within Visa's production environment.

Software Engineering and ML Intern June 2024 – August 2024

- Developed a scalable embedding-based database comparison tool to validate a custom data replication solution, efficiently handling ∼10M-record tables.
- Proposed a novel framework leveraging embeddings for large-scale data inconsistency detection.
- Recognized with a **Technical Innovation Award** by the VISA IP Team for impactful innovation.

Awards and Scholarships

- Secured **98.8 percentile** in JEE Mains, among **1 million candidates nationwide** 2021
- **Karnataka State Police Hackathon** — 1st place out of 150+ teams 2023
- **HACK'E'LTH Hackathon, GE HealthCare** — 2nd place out of 100+ teams 2023
- **Prof. MRD Scholarship Award (PES University)** — Top 5% among 1000+ students 2024
- **Amazon ML Challenge 2024** — Ranked 65 out of 2000+ teams nationally (Top 5%) 2024
- **Best Paper Awards ICDMAI 2025** — Awarded for 2 papers 2025

Technical Skills

Programming Languages: Python, C, C++, R, Golang, SQL

ML Frameworks: Scikit-learn, Pytorch , Hugging Face Transformers

Technical Skills: Machine Learning, NLP, Generative AI, Reinforcement Learning, Data Science

Databases: MongoDB, IBM DB2, MySQL

Big Data Frameworks: Pyspark, Hadoop, Spark Streaming

Developer Tools: Git, Github Copilot, VS Code

References

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