Adugani Vanjari Akanksh

Center for Machine Intelligence and Data Science
M.S. by Research (CMInDS), IIT Bombay
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Academic Qualifications

Program	Discipline	University	Year	GPA
MS by Research (MSR)	Artificial Intelligence and Data Science	IIT Bombay	2024 - Present	9.15/10
Bachelor of Technology	Electrical Engineering	IIT Tirupati	2018 - 2022	8.63/10
Intermediate Education (XII)	MPC	TSBIE	2016 - 2018	95.5%
Secondary Education (X)	MPC	TSBSE	2016	9.5/10

Professional Experience

Software Developer (Backend) at Paytm *Jan'23 - Dec'23*
FSM Team & BINARY Team *Paytm, India*

- Implemented new features and enhancements to the existing code base of **Field Service Management (FSM)**
- Automated file processing related to merchant's invoice/bill generation, previously handled manually by the Revenue Assurance team

Jr. Data Scientist at Holmusk *June'22 - Aug'22*
Guide: Shivshankar Umashankar *Holmusk, Singapore*

- Improved the code base of **Neuroblu** web application for healthcare analytics and patient outcome prediction
- Optimized dashboard performance, reducing latency from 20 seconds to 2 seconds (**10x improvement**)

Technical Skills

Programming Languages	**Python**, **C++**, C, JavaScript, Java
Frameworks & Libraries	TensorFlow, PyTorch, Scikit-Learn, NumPy, SciPy, Django, React.js, Spring Boot
Tools & Technologies	Git, LaTeX, MATLAB, VHDL, Model-sim, HTML, p5.js, Processing
Hardware	Arduino, Raspberry Pi
Others	InkScape

Key Projects

Price Forecasting using ABM, LMM *Jul'25 - Present*
Guide: Dr. Piyush Pandey *IIT Bombay*

- Performed a focused literature review of Agent-Based Models (ABM) and Large Market Models (LMM — Large Market Model, analogous to LLM) based on papers ; read and synthesized modeling choices, calibration methods and evaluation metrics.
- Summarized common ABM design patterns from the papers: heterogeneous agents (fundamentalists, chartists, liquidity providers), simple order-matching rules, and mechanisms that reproduce stylized facts (fat tails, volatility clustering).
- Currently implementing the Kronos paper as a prototype and evaluating where structural or algorithmic improvements could be introduced.

Param-1 Indic-Scale Bilingual Foundation Model *Jan'25 - May'25*
Guide: Kundeshwar Pundalik AIKOSH Model details *IIT Bombay*

- Worked on the data curation pipeline, processed around 12TB of data using Nvidia's Nemo Framework, worked on quality filter, classification filter on datasets like Zyda, FineWeb, DCLM, and Dolma.
- Created a script to scrape data from archive.org which can be used for training the model.

Fruit Quality Estimation using Deep Learning *Jul'21 - May'22*
Guide: Dr. Rama Krishna Sai Gorthi *IIT Tirupati*

- Developed a **computer vision system** to estimate fruit size from depth maps extracted from stereo images
- Implemented **BGNet architecture** with custom modifications for precise size estimation with less than 5% error
- Processed over 1000 fruit images to create a comprehensive dataset for training and validation
- Achieved **92% accuracy** in fruit size classification across multiple varieties of fruits

Deep Learning for Speech Enhancement *Mar'21 - May'21*
Guide: Dr. Rama Krishna Sai Gorthi *IIT Tirupati*

- Enhanced speech signals corrupted with environmental noise using a **UNet++ architecture**

- Achieved **8.2 dB improvement** in Signal-to-Noise Ratio (SNR) compared to traditional filtering methods
- Processed audio in both time and frequency domains, using spectrogram transformations for better noise isolation
- Validated results on the publicly available NOIZEUS dataset with multiple noise conditions

Prediction of Flows in Power Grids using Deep Learning *Mar'21 - May'21*
Guide: Dr. Vignesh V *IIT Tirupati*

- Developed **predictive models** to assist human operators in power grid management decisions
- Combined **LSTM** and **GCN (Graph Convolutional Networks)** to capture temporal and spatial dependencies
- Trained on real-world power grid data with over 5000 operational scenarios from Indian power grid networks
- Achieved **94% accuracy** in predicting load flow patterns and potential grid disturbances

SURF: Speeded Up Robust Features *Mar'21 - May'21*
Guide: Dr. Subramanyam Gorthi *IIT Tirupati*

- Implemented **SURF algorithm** from scratch using Python, creating a scale and rotation invariant feature detector
- Optimized performance using integral images and Hessian matrix approximation for faster computation
- Applied the implementation for object recognition tasks, achieving **87% matching accuracy** on benchmark datasets
- Compared performance with SIFT and ORB algorithms, demonstrating SURF's computational efficiency advantages

AI Flappy Bird *Mar'21 - May'21*
Self Project *IIT Tirupati*

- Developed an **AI agent** using **NEAT (NeuroEvolution of Augmenting Topologies)** for playing Flappy Bird
- Implemented the game environment using p5.js and integrated neural network-based decision making
- Trained the AI through multiple generations (200+) to achieve **indefinite gameplay** without crashing
- Visualized the neural network structure and learning progress in real-time during training

ML Electricity Bot *Mar'20 - May'20*
Guide: Dr. Suresh Jain *IIT Tirupati*

- Created a mobile application to promote electricity conservation through **ML-powered appliance recognition**
- Implemented an **object detection model** using MobileNetSSD to identify household appliances via camera
- Developed an algorithm to calculate electricity consumption based on device usage patterns
- Achieved **91% accuracy** in recognizing common household appliances and estimating their power consumption

Indoor Navigation System (SIH2020) *Jan'20 - Feb'20*
Self Project *Smart India Hackathon 2020*

- Designed a web application for indoor navigation in areas where GPS lacks accuracy
- Implemented **A* and Dijkstra's algorithms** for calculating optimal paths within building floor plans
- Created a user-friendly interface allowing users to upload building layouts and select waypoints
- Developed a real-time tracking system using Wi-Fi triangulation for accurate indoor positioning

Positions of Responsibility

System Administrator *Jul'24 - Dec'25*
Indian Institute of Technology Bombay *Bombay, India*

- Maintain the CMInDS website and automatically backup the website when there are new changes to the website.
- Make new services for Department like OSTicket, Interview Portal, Research Publication Website, etc.

Placement Representative *Jul'21 - Jun'22*
Indian Institute of Technology Tirupati *Tirupati, India*

- Facilitated smooth placement processes for various organizations visiting IIT Tirupati for over 170 students
- Coordinated between companies, placement cell, and students to streamline the recruitment process
- Organized pre-placement talks, interviews, and follow-up communications with industry partners

NSS Co-coordinator *Aug'19 - Aug'20*
National Service Scheme, IIT Tirupati *Tirupati, India*

- Led and organized various NSS activities in nearby villages focusing on sustainable development initiatives
- Encouraged student participation in community service, achieving **80% active involvement** from the batch
- Coordinated educational outreach programs benefiting over 200 school children in rural areas

Achievements

- Finised in **top 10** in the QuantQuest competition conducted by **QRT** at **IIT Bombay** among 200+ teams. *(2024)*
- Secured **2nd place** in "F.I.R.E" (Flame Imaging Robot Extinguisher) technical event at Tirutsava *(2020)*
- Secured **2nd place** in "ArduiKnow Challenge" competition during Tirutsava 2020 *(2020)*
- Secured **3rd place** in the Terrace Farming Robot competition at **Inter IIT Tech Meet 8.0** among 23 IITs *(2019)*
- Won **1st place** in "The Line Following Robot" competition held by TechManiacs club, IIT Tirupati *(2019)*

Relevant Coursework

Machine Learning	Fundamentals of Machine Learning , Computer Vision, Deep Learning Techniques
Signal Processing	Signals and Systems, Digital Signal Processing, Image Processing Fundamentals
Computer Science	Data Structures and Algorithms, Digital Systems, Introduction to Robotics
Mathematics	Linear Algebra, Probability and Statistics, Optimization Techniques

Additional Projects

- **Terrace Farming Robot:** Built an autonomous robot capable of ploughing, seed sowing, watering, and harvesting, with the ability to navigate between different terrace levels *(2019)*
- **JPEG Compression:** Implemented the JPEG compression algorithm from scratch in a team of four, achieving compression ratios comparable to standard implementations *(2019)*
- **Spectrogram and Periodogram Analysis:** Generated and analyzed spectrograms and periodograms of various signals using MATLAB, applying window functions for improved frequency resolution *(2020)*

Interests & Hobbies

- **Personal:** Badminton, Drawing, Table Tennis, Brand Logo Designing