KALAVACHARLA VENKATA SIVA VAMSI | 21ME31024

B.Tech.(Hons.) in MECHANICAL ENGINEERING and M.Tech. in MANUFACTURING SCIENCE AND ENGINEERING
MINOR in COMPUTER SCIENCE & ENGG. (B.Tech 4Y)
MICRO SPL. in ARTIFICIAL INTELLIGENCE AND APPLICATIONS

EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2026	M.TECH Dual Degree 5Y	IIT Kharagpur	8.38 / 10
2021	Board of Intermediate Education	Narayana Junior College	98.9%
2019	Board of Secondary Education	Dr. KKR's Gowtham Concept School	10 / 10

INTERNSHIPS

Data Science Internship | NovaTechSet   **Dec '24 - Present**
• Developed automated **Data analysis pipelines** named **GiniMachine**, enabling insights visualization and predictive modeling for datasets.
• Built an NLP-based task management system using **Pegasus-XSum,** improving task summarization, prioritization efficiency by over **30%**.
• Created advanced **financial forecasting** models for loan eligibility using **Decision trees, Ensemble methods**, improving business impact.

Data Science Internship | Lawsikho   **Nov '24 - Present**
• Engineered a **REST API pipeline** to extract, preprocess, and integrate **student performance**, tutor activities, and chat logs for analysis.
• Implemented **BERT, GPT,** and **VADER** for intent detection, chat summarization, and sentiment analysis, assessing satisfaction and trends.
• Designed strategies linking **tutor methods, grading patterns**, engagement metrics to outcomes, enabling targeted tutor development.

PROJECTS

Research Intern | IIT Kharagpur | Prof. Sudeshna Sarkar   **Aug '24 - Nov'24**
• Integrated **CheXNet** with a **Transformer-based encoder-decoder** and **GloVe embeddings** for multimodal learning, utilizing Pytorch.
• Trained with optimized hyperparameters, applying image preprocessing **(resizing, normalization, padding)** and **soft attention** in X-rays.
• Achieved BLEU scores (**BLEU-1: 0.72, BLEU-2: 0.68, BLEU-3: 0.67**), demonstrating the model's ability to generate radiology reports
• Utilized **region-based CNNs**, **Named Entity Recognition (NER)** to identify problem regions in X-rays, enhancing narrative accuracy

Research Intern | IIT Patna | Prof. Sriparna Saha   **Jan '24 - Mar'24**
• Built a **CentralNet model** for classifying problem statements from tweets of bank customers using **19** features from images and text
• Engineered dense layers for text, visual features using **dropout, batch normalization, early stopping** to enhance classification
• Achieved top **F1 scores (Micro: 0.639, Macro: 0.561)** with fusion approach, integrating text **(word2vec)** and visual **(VGG-16)** embeddings
• Applied **ModDrop** and **Gated Multimodal Unit** techniques to enhance multimodal classification accuracy in Financial Sentiment Analysis

Research Intern | IIT Kharagpur | Prof. Surjya Kanta Pal   **Oct '23 - Feb'24**
• Preprocessed **6000+ FSEW** force, temperature data using **scaling, DR** optimizing input factors like penetration depth, speed, rotation
• Developed high-accuracy predictive models with Sequential Dense**, LSTM**, **Dropout layers** to effectively capture **temporal** characteristics
• Enhanced understanding of **temperature dynamics** in FSEW through **heatmaps** and result visualization, aiding process comprehension
• Achieved mean error percentages of **6.17% with LSTM** and **5.65% with GRU**, showcasing the models' efficiency in predicting variations

Google Stock Prediction Model | Self Project   **May '24**
• Developed **LSTM** model with **4 layers (50 units each)** and **Dropout (0.2)**, optimized for capturing **temporal patterns** in stock price data
• Utilized **Bollinger Bands (MA20, MA50, BB_up, BB_dn)** and **MinMaxScaler** for effective feature scaling, enhancing model performance
• Applied innovative techniques like the **Hilbert transform** and **growth/decay entropy** to capture nuanced time and feature dependencies
• Evaluated model accuracy achieving a robust **83% accuracy** in predicting stock prices, demonstrating its efficacy in real-world scenarios

COMPETITION/CONFERENCE

Data Analytics | Technology General Championship, IIT Kharagpur (Silver)   **Mar '24**
• Visualized **Social Determinants of Health** (SDOH), geographic patterns using sunburst plots and choropleth maps on **100,000+ records.**
• Reduced dimensions with PCA, achieving **92%** accuracy, **>98%** data completeness using **XGBoost**, Gradient Boosting, KNN, and **Datawig**
• Clustered census tracts using K-Means and Gaussian Mixtures, integrating **Llama 2** for efficient spatial analysis and **pattern discovery**.

SKILLS AND EXPERTISE

Programming Languages: C++ | C | Python | SQL | JavaScript | HTML | CSS | ReactJS
Libraries: Hugging Face | TensorFlow | Scikit-Learn | Matplotlib | Seaborn | Keras | Pandas | Pytorch | spaCy | NLTK | OpenCV | Annoy
Softwares and Tools: Google Colab | Jupyter Notebook | GitHub | VS Code | Anaconda | Tableau | Power BI | AWS | MySQL | FastAI

COURSEWORK INFORMATION

Programming : Algorithms | Algorithms Lab | PDS | PDS Lab | Operations Research | Advanced calculus | Transform Calculus
MOOCs : Machine Learning Specialization|Convolutional Neural Networks | NLP with Probabilistic and Sequence Models | Data Analytics
Academic : Kinematics,Kinetics of Machines | Design of Machine Elements | Basic Electronics | Mechatronics |Applied Thermodynamics

POSITIONS OF RESPONSIBILITY

Web Head and Junior Coordinator | KGTS | IIT Kharagpur   **Jul '23 - Apr '24**
• Managed juniors and organized a successful **Stratathon event** focused on game theory, involving collaboration with the IIT Bombay team
• Leading the development of a **website** for KGTS with features like a **meme page** and **daily puzzles** to boost community engagement
• Contributed to game development and **created 2 new** games for the society, fostering knowledge meets and community engagement

Core Organising Team Member | Kshitij | IIT Kharagpur   **Aug '22 - May '23**
• Organized **Boeing-sponsored** Laws of Motion event, managing **50+** teams, coordinating with **3** judges, and administering a **2.4 lakh** prize
• Efficiently coordinated **Kolkata Robotics Workshop** with team, attracting **1500+** students, and effectively managed the **Anadigix** event
• Led a team of **30** Campus Ambassadors for Kshitij, overseeing nationwide publicity and organized the **Kascade** event in **Bangalore**