

VENKATA SATYA SAI PRUDHVI GUDLA

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Education

Year	Degree/Certificate	Institute	CPI/%
2025	B.Tech, Metallurgical and Materials Engineering with Minor in Computer Science Engineering	Indian Institute of Technology, Kharagpur	8.66/10
2021	APBIE(XII)	Sri Venkateswara Classes, Visakhapatnam	96.1%
2019	CBSE(X)	Delhi Public School, Visakhapatnam	95.8%

Experience

Akridata

Sep 2025 – Dec 2025

Computer Vision Research Intern

Bangalore, Karnataka (Remote)

- Built a Python document parsing module leveraging metadata-based extractors, Gemini, and LandingAI agentic workflow
- Automated the conversion of legacy inspection documents into a retrieval-optimized knowledge base for Akridata's platform

Laboratoire Hubert Curien, Jean Monnet University

May 2024 – Jul 2024

Research Intern | Charpak Lab Scholar | Guide: Prof. Kamal Singh

St. Etienne, France

- Developed a novel JSON-LD compression algorithm and its Python library, achieving **95.1%** network overhead savings
- Enhanced algorithm efficiency by integrating a **Char-RNN** to compress unstructured text strings using arithmetic coding

Projects

Scalable Perimeter Breach Detection System

Jan 2025 – Apr 2025

- Designed a high concurrency backend using **Apache Kafka**, **FastAPI** and **MQTT** to trigger hardware alarms on breach
- Accelerated **YOLOv8** inference by **2.4x** via **TensorRT** optimization, enabling low-latency for real-time breach detection

SteelEye - AI Powered Ladle Tracking System for Steel Plants

Jan 2024 – Nov 2024

- Automated ladle number detection in steel plants using fine-tuned YOLOv8 for robust recognition in harsh environments
- Engineered a real-time ladle tracking dashboard using **FastAPI** and React to deliver real-time key performance indicators
- Developed a **RAG** chatbot that generates SQL queries to answer natural language user questions within the host web app

CLIP CPE Zero Shot Defect Classification

Aug 2025 – Sep 2025

- Developed a zero-shot defect classification with CLIP and Compositional Prompt Ensemble to improve feature alignment
- Achieved **64.5%** accuracy on MVTec AD hazelnut dataset via cascaded inference for joint anomaly and defect classification

GNNs vs. XGBoost: Molecular Property Prediction Pipeline

Nov 2025 – Dec 2025

- Developed an **MLflow** framework to benchmark GNNs and XGBoost on QM9 dataset for molecular property prediction
- Demonstrated GINE's superior performance on energy targets, achieving $R^2 = 0.999$ using Graph Isomorphism Networks

PaliGemma VLM Implementation from Scratch

Oct 2025 – Nov 2025

- Built PaliGemma from scratch in **PyTorch**, fusing SigLIP and Gemma models for multimodal VQA and object detection
- Ported a VQ-VAE decoder from JAX to PyTorch to reconstruct masks from special tokens, enabling zero-shot segmentation

Publications

- A Amalanshu, V Nagaswamy, **G Prudhvi**, Y Sirvi, Entity Augmentation for Efficient Classification of Vertically Partitioned Data with Limited Overlap - *GLOW Workshop, International Joint Conference on Artificial Intelligence (IJCAI), 2024*

Achievements

- Awarded the **Charpak Lab Scholarship 2024**, granted to only 35 students nationwide from the French Institute in India
- Received the **AI4ICPS Chanakya Fellowship** for building an end-to-end distributed ladle tracking system for steel plants
- Secured **National Finalist** at **Smart India Hackathon 2023** for building a computer vision-based ladle tracking system
- Built the gold-winning prototype for robust volumetric weight estimation at **Inter IIT Tech Meet 11.0, Kanpur, UP**

Skills

Languages and Libraries: C, Python, SQL, NumPy, Pandas, Matplotlib, PySpark, mne, Scikit-learn, TensorFlow, PyTorch, PyG, CUDA, Flower, FastAPI, AsyncIO, Streamlit, MLflow, LangChain, LangGraph, OpenCV, Open3D, NetworkX, RDKit
Technologies/Frameworks: ROS, Git, GitHub, Docker, Kubernetes, Airflow, Kafka, Linux, AWS, Arduino, TensorRT, n8n

Positions of Responsibility

Student Satellite Program IIT KGP

Jan 2024 – Apr 2025

Founding Member

Kharagpur, West Bengal

- Executed a pivotal role in **CubeSat** design by interfacing sensors with Raspberry Pi Zero to verify raw I2C data integrity
- Implemented a LoRa RFM95W-based link with a spring antenna on the satellite and a Yagi antenna at the ground station

Autonomous Ground Vehicle Research Group, IIT Kharagpur

Aug 2022 – Apr 2025

Mechatronics and Vision Team lead | Guide: Prof. Debashish Chakravarty

Kharagpur, West Bengal

- Engineered a novel entity augmentation technique for vertical federated learning to handle data with limited entity overlap
- Achieved **69.5%** accuracy with ResNet-18 on CIFAR-10 with 5% entity alignment, outperforming standard VFL baselines

Relevant Coursework

- Advanced Digital Image Processing and Computer Vision
- Machine Learning Foundation and Applications
- Computer Architecture and Operating Systems
- Probability and Statistics
- Programming and Data Structures
- Switching Circuits and Logic Design