

# Sri Hari Sirisipalli

📍 Visakhapatnam, India    ✉ sriharisirisipalli@gmail.com    ☎ +918317683013    🔗 srihari    🌐 srihari-sirisipalli    📁 sri-portfolio

## 👤 Profile

AI/ML Engineer with expertise in **Generative AI, Cloud Infrastructure (AWS, Terraform, Kubernetes), and applied R&D**. Delivered production-ready **LLM apps, real-time AI avatars, predictive maintenance, and simulation-driven ML**. Strong record in **cost optimization, infra automation, and AI advisory** across defense, industry, and agritech domains.

## 🛠 Core Skills

**Languages** — Python, C, Go, Java, JavaScript, SQL, Matlab, Node.js

**Machine Learning & AI** — Deep Learning, NLP, LLMs, RAG, Predictive Modeling, Explainable AI, MLflow

**Frameworks & Libraries** — PyTorch, TensorFlow, FastAPI, Django, Flask

**Cloud & Infra** — AWS (Lambda, EC2, Amplify, IAM), Docker, Kubernetes, Terraform, CI/CD

**Data Engineering** — PySpark, Hadoop, ETL Pipelines

**Numerical & Simulation** — ANSYS APDL, FreeCAD, CFD, Finite Element Analysis

**Tools & Platforms** — Prometheus, Grafana, Jupyter, ChromaDB

## 📁 Professional Experience

### Software Engineer – GenAI & Cloud Infra

03/2024 – present | Remote

*Pangeon*

- Built **patent similarity system** using LLMs for prior art detection, novelty assessment, and infringement analysis.
- Designed **dynamic AWS architecture** with EC2 autoscaling, reducing infra costs by >30%.
- Migrated workloads to **GPU-enabled Lambda**, reducing EC2 dependency.
- Automated **Lambda health checks & audits**, improving resource utilization.
- Delivered **end-to-end AWS infra with Terraform** (Amplify, IAM, monitoring, security).
- Built **custom Terraform GUI** for simplified AWS resource management.

### Data Engineer

03/2023 – 06/2023 | Hyderabad

*Sas2Py*

- Migrated **SAS → PySpark**, improving scalability & performance of large data pipelines.
- Built automated **validation scripts with HTML reports**, ensuring >99% migration accuracy.
- Applied **graph theory** to map dependencies, uncovering pipeline bottlenecks.

### Machine Learning Intern

07/2022 – 12/2022 | Hyderabad

*Corteva Agriscience*

- Converted models across **TensorFlow/PyTorch → ONNX/other formats** for cross-platform deployment.
- Optimized **computer vision models** via compression, quantization, and pruning.

### Software Engineer Intern

06/2022 – 12/2022 | Remote

*Dojima Networks*

- Integrated **Polkadot ecosystem** with Dojima blockchain for cross-chain interoperability.
- Built **Prometheus–Grafana dashboards** for real-time API monitoring.

## 🔬 Research & Development Experience

### Machine Learning Engineer – Naval & Industry R&D Projects

05/2024 – Present

*Defense & Industry Clients*

#### Navy Projects

- **Lead Developer – Real-Time AI Avatar System:**
  - Built offline-capable **3D AI avatar** with Whisper STT, Ollama LLM, LangChain RAG, and Silero TTS lip-sync.
  - Reduced **STT latency by 75%** and **TTS latency by 52%**; deployed low-latency stack (FastAPI + React + Three.js).
  - Designed **RAG Control Gate** ensuring accurate knowledge base use.
- **Predictive Maintenance of Naval Systems:**
  - Built **anomaly detection pipelines** from accelerometer data with features (RMS, FFT, kurtosis).
  - Trained **Random Forest, SVM, k-NN, DL models** with cross-validation + expert-in-the-loop validation.
  - Enabled **early fault detection**, reducing downtime; findings shared in **defense R&D conference**.

#### Industry R&D Projects

- **AI-Driven Offshore Riser Behavior Modeling & Wave Direction Estimation**
  - Modeled **fatigue life prediction** for offshore risers under extreme sea states.
  - Integrated **wave directionality, quadrant classification, and Hs** into ML models.
  - Processed **gyro data** for wave direction estimation, improving environmental modeling and risk assessment.
- **Automated Engineering Simulation Pipelines:**
  - Automated **ANSYS APDL + FreeCAD workflows** for wind turbine design-to-analysis.
  - Enabled **parametric modeling, mesh generation, and modal analysis automation**.
  - Integrated **ML-driven optimization loops** to speed design iterations.

## 📁 Advisory Experience

### AI/ML Advisor – Agritech Startup

03/2025 – 08/2025

- Conducted **benchmarking** of commercial (OpenAI, Anthropic) and open-source LLMs (LLaMA, Mistral, etc.) for **domain-specific QA on agriculture datasets**.
- Evaluated **answering capabilities in English and Telugu**, with emphasis on **Andhra agriculture use cases**, identifying strengths and limitations of each model.
- Designed a **speech-to-text fine-tuning pipeline**, automating audio collection, transcription, diarization, and dataset preparation.
- Fine-tuned STT and LLM models with **agriculture-specific vocabulary**, improving accuracy for **farmer queries in bilingual contexts (English & Telugu)**.

## Education

### Bachelor of Technology (B.Tech) – Mechanical Engineering

Mahindra university, Hyderabad

Graduated in 2022 with CGPA: 7.5

08/2018 – 06/2022 | Hyderabad, India

## Core Competencies

- Adaptive to dynamic environments and shifting project priorities
- Proven leadership in team and independent projects
- Strong communication across technical and non-technical stakeholders
- Collaborative mentor and team contributor
- Analytical problem-solver with critical thinking skills

## Certifications

- Stanford Machine Learning [↗](#)
- IBM Machine Learning [↗](#)
- University of Michigan's applied ML [↗](#)
- Deep Learning Specialization [↗](#)
- Deep Learning with TensorFlow [↗](#)

## Courses

Introduction to Computer Science(ES106) | Linear algebra and Matrices(MA102) | Probability and Statistics(MA203) | Data Structures(ES210) | Computer Aided Engineering Design(ME 201) | Big Data Computing(CS476) | Advance Data Analytics(CS 452) | Time Series Forecasting(MA462) | GPU programming(CS481)

## Projects

### Quantum Neutrino Oscillation Study

03/2022 – 06/2022

- Developed mathematical models for a long baseline neutrino oscillation experiment.
- Derived oscillation parameters and established correlations between LG inequalities and neutrino oscillations.
- Utilized the scientific library Globes in C for simulation.

### Stock-Price Modeling with Numerical Methods

02/2022 – 06/2022

Team Lead

- Led a team to simulate stock and option prices using Euler-Maruyama and Black Scholes methods.
- Utilized Python to develop the simulation code.
- Conducted comparative analyses against GBM and FGBM-based models.

### Geometric Fractional Brownian Motion in Stock-Price Modeling [↗](#)

10/2021 – 12/2021

Team Lead

- Guided a team of 4 in developing models to simulate stock pricing using FGBM.
- Utilized Python (Jupyter Notebook) to assess error minimization between Geometric Brownian and FGBM models.
- Employed root mean square error as the error metric.

### Movie Recommender System Implementation

04/2021 – 05/2021

Team Lead

- Led a team of 5 to build a movie recommender system using item-based collaborative filtering (IBCF) and MapReduce on Hadoop.
- Applied collaborative filtering techniques to enhance recommendations.

### Crank Slider Mechanism IC Visualization

03/2020 – 04/2020

Team Lead

- Developed Python code to visualize Instantaneous Centers (ICs) of crank slider mechanisms.
- Generated videos illustrating complete locus of ICs for diverse mechanism inputs.
- Enabled users to obtain mechanism images and IC coordinates at any crank position.

### Wind Turbine Power and Energy Prediction Web App [↗](#)

06/2019 – 06/2019

- Collaborated in a 2-member team to create a web application predicting wind turbine output power and energy.
- Spearheaded the machine learning model development and integration with the frontend using Flask.
- Achieved over 92% R Square accuracy using Random Forest Regressor for output power and energy predictions.

## Extracurriculars

### CODEIAM

07/2024 – 07/2024 | Visakhapatnam

Mentor

- Mentored **3 teams** at a university-level coding hackathon, guiding them through problem-solving, debugging, and presentation.
- Outcome: **2 teams ranked in the top 5 out of 40**, showcasing successful mentorship and applied leadership.

### AERO Sports Meet

01/2019 – 05/2022

Volunteer & Security Team

- Actively contributed to organizing annual **AERO sports events**, managing logistics, scheduling, and participant coordination.
- Served as part of the **security & operations team**, ensuring smooth execution of large-scale student gatherings.
- Gained experience in **event planning, risk management, and crowd coordination** under time-sensitive conditions.

### Zenith Science Club

08/2019 – 05/2022

Core Team Member

- Organized **MU Research Symposium 2020**, facilitating presentations of innovative student projects and faculty research.
- Led **interactive science quizzes and R&D showcases** with the theme of *Sustainable Development*.
- Fostered a **culture of innovation and scientific curiosity** by engaging both faculty and peers in discussions on real-world applications of science.