SUDHARSHAN GOPALAKRISHNAN

Registration No.: 22BDS0106

+91 9867372681 — sudharshang2004@gmail.com — linkedin.com/in/sudharshang12 —
github.com/SudharshanG12

Profile

Computer Science undergraduate (Data Science) with internship experience building ML pipelines and back-end APIs. Skilled in statistical analysis and data visualization to solve client problems. Experience in collaborating across teams, extracting and validating data, providing insight and presenting clear recommendations to stakeholders. Proficient in Python, SQL, PyTorch, scikit-learn, Flask/FastAPI, and Docker. Recent work: higher-order MAML evaluation, real-time ambulance detection (YOLOv5), and RAG-based hallucination checks; focus on reproducible experiments and clear metrics.

Experience

Software Engineering Intern - Backend and MLops basics SymphonyAI
May 2025 – Present

- Worked with cross-functional teams in **US time-zones** to build ML-driven backend services.
- Designed secure REST APIs in Flask/FastAPI, supporting analytics workflows for client-facing tools.
- Optimized SQL queries and schema design with PostgreSQL/TimeScaleDB, improving scalability by 30%.
- Containerized ML pipelines with Docker, enabling reproducible and portable deployments.
- Automated validation using Pytest/Tavern, achieving 95% test coverage and reducing regressions.
- Partnered with Data Science teams to deliver **actionable, data-driven solutions** under tight timelines.

Education

B.Tech – Computer Science (Data Science Specialization) VIT, Vellore
2022 – 2026 CGPA: 8.93

Class 12 – The PSBB Millennium School, Coimbatore 2022
Percentage: 95.2%

Class 10 – The PSBB Millennium School, Coimbatore 2020
Percentage: 96.4%

Projects

Higher-Order Derivatives in MAML — Variants & Analysis PyTorch, Higher, Omniglot

- Implemented second-order MAML with configurable K (1/2), leveraging create_graph for higher-order gradients; modular pipeline with YAML configs, seed control, checkpointing, and structured logging.
- Built a reproducible few-shot evaluation suite (Omniglot 5-way 1/5-shot) with automated ablations over optimizers (SGD, Momentum), learning rates, and unroll depth; tracked cost-normalized metrics.
- Under a fixed 20-minute budget: K=1 + Momentum achieved **96.24% Acc@1** (+0.89 pp vs SGD) at **979 MB** peak memory.
- Demonstrated that optimizer choice outperformed deeper unrolling: K=2 + SGD dropped to **94.51%** and **1082 MB** memory (+10.3%). .

Ambulance Detection in Traffic YOLOv5, OpenCV, Python

- Built a **real-time emergency vehicle detection system** using YOLOv5 for traffic management.
- Integrated temporal modeling (RNNs), boosting accuracy by 15% and cutting false negatives by 22%.
- Demonstrated **practical business impact** by enabling automated traffic signal prioritization.

Melanoma Detection Pipeline - (selected to be published) TensorFlow, Ensemble Learning, TPUs

- Developed an ensemble of 5 deep learning models, achieving 0.89 AUC on 25K+ dermoscopic images.
- Reduced false negatives by 18% through adaptive averaging and multi-resolution preprocessing.
- Showcased end-to-end workflow: data preparation, model validation, and result reporting.

IPL Next-Ball Outcome Prediction & State Profiling Scikit-learn, Logistic Regression, Random Forest, Ridge, K-Means

- Built an end-to-end pipeline on IPL ball-by-ball data: feature engineering (over/ball index, cumulative runs/wickets, run rate, lags) and preprocessing via ColumnTransformer (one-hot, scaling); used a stratified train/test split.

- Predictive modeling: next-ball wicket classification (5% positives) with Logistic Regression/Random Forest (class weighting, threshold tuning) reported ROC-AUC and F1; next-ball runs regression (Ridge/Random Forest) yielded a stable expected-runs signal of **1.1–1.2 runs/ball** with MAE, RMSE, and R-squared + calibration checks.

Technical Skills

- **Programming & Data:** Python, SQL, R, Java, C/C++
- **Data Analysis:** EDA, statistical modeling, predictive models, workflow automation
- **ML/DL & GenAI:** PyTorch, TensorFlow, scikit-learn, YOLOv5, OpenCV, LLM APIs, Ensemble Learning
- **Web & APIs:** Flask, FastAPI, React, RESTful services, data scrapers

- **Databases:** PostgreSQL, MySQL, TimeScaleDB
- **Tools:** Docker, Git, Postman, Pytest, Tavern, Marshmallow
- **Business Tools:** Excel, Google Sheets (financial/statistical models, dashboards)
- **Cloud:** AWS (Basics)

Certifications

— IBM Data Science Professional Certificate
— Azure AI Fundamentals
— Deep Learning Specialization (DeepLearning.AI)
— NPTEL: Learning Analytical Tools

Achievements & Leadership

– Flipkart Grid 7.0 Semi-finalist among 120,000+ participants, 2025
– Senior Core Member – IEEE Computer Society, VIT: Organized coding contests, workshops, and backend consulting sessions