Sona Rosa Babloo

Trivandrum, Kerala, India
Email: sonarosababloo@gmail.com
Phone: +91 9895588391
LinkedIn: linkedin.com/in/sona-rosa-babloo-725453227
GitHub: github.com/sonarosa

Profile Summary

Machine Learning Engineer Enthusiast with hands-on experience in building, training, and optimizing ML and deep learning models for real-world deployments. Skilled in end-to-end ML workflows including data preprocessing, model training, hyperparameter tuning, evaluation, and scalable deployment. Strong background in computer vision, NLP, and embedded AI systems. Experienced with PyTorch, TensorFlow, Scikit-Learn, and production-level ML engineering practices.

Technical Skills

Programming: Python, Java, C++, R, MATLAB, Rust, C
ML Frameworks: Scikit-Learn, PyTorch, TensorFlow, Keras
Deep Learning: CNNs, YOLO (v3–v8), BERT, Transformers
LLMs & Agentic AI: GPT-based Models, LLaMA, LangChain, RAG Pipelines, Vector Databases (FAISS, Chroma), Prompt Engineering, Multi-step Reasoning, Tool-Use Agents
Model Engineering: Hyperparameter Tuning, Loss Design, Experiment Tracking, Pipeline Optimization
Data Engineering: Pandas, NumPy, PySpark, SQL, Data Pipelines
MLOps & Tools: Git, IBM Cloud, GStreamer, NNStreamer, Google Colab
Deployment: Embedded AI, Edge Deployment, Real-time Inference
Web/Software: Node.js, React.js, HTML, CSS

Experience

Project Engineer Jun 2025 – Present
IIT Tirupati

- Designed, trained, and optimized deep learning models for small object detection.
- Developed a custom cross-entropy variant to improve YOLO detection accuracy.
- Built and validated ML pipelines to evaluate model robustness under challenging imaging conditions.
- **Key Skills:** Model Optimization, Loss Engineering, ML Evaluation, Deep Learning

ML Intern Nov 2024 – Apr 2025
Geojit Financial Services Ltd.

- Engineered ML components to improve scalability of financial exchange gateway systems.
- Contributed to automation pipelines and AI-driven decision models.
- Explored integrating LLM-driven automation and workflow agents to improve decision pipelines in financial systems.
- **Key Skills:** ML for Finance, Model Integration, Systems Optimization

Research Intern May 2024 – Jul 2024
IIT Tirupati

- Addressed class imbalance challenges using model-centric and data-centric ML techniques.
- Trained YOLO models with synthetic data augmentation for adverse weather robustness.
- **Key Skills:** Data Augmentation, Synthetic Data, CV Model Training

Intern Jun 2023 – Jul 2023
KPIT Technologies Ltd., Kochi

- Developed an embedded driver-monitoring system integrating TensorFlow models.
- Built edge AI pipelines using GStreamer and NNStreamer for low-latency inference.
- **Key Skills:** Edge AI, Embedded ML Deployment, Real-time Inference

Achievements

- **First Prize – Hackify**: Built a YOLOv7-based automated medical assistant to support junior doctors with real-time inference and decision support.
- **Prize Winner – HackAthena'24**: Developed a real-time driving learner assistance system using YOLO for obstacle assessment and driver feedback.
- **FIN-A-THON Finalist**: Created a hyperpersonalized ML-driven banking recommendation engine for large-scale financial applications.

Projects

Small Object Detection in Adverse Weather
Developed and optimized YOLOv8-based models for small object detection under fog, rain, and low-light conditions.
Skills: Model Training, CV Pipelines, Synthetic Data

AI Automation in Financial Systems
Built ML-powered automation modules for trade gateway systems.
Skills: ML Engineering, Automation, Financial Modeling

Medical NER and Relation Extraction
Fine-tuned BERT to extract biomedical entities and relations.
Skills: Transformers, NLP, Fine-Tuning

Automated Driving Learner Assistance – HackAthena'24 (Prize Winner)
Trained YOLO models for real-time obstacle assessment and driver feedback.
Skills: Real-Time ML, Model Deployment, Computer Vision

Automated Medical Assistant – Hackify (First Prize)
YOLOv7-based inference pipeline designed for assisting junior doctors.
Skills: Model Deployment, Healthcare AI, Inference Optimization

Hyperpersonalized Banking Recommendations – FIN-A-THON Finalist
Developed an ML-driven recommendation engine for banking applications.
Skills: Recommendation Systems, User Modeling

Publications

Multi-UAV Tracking through Complementary Trackers Fusion in IR Videos.
Accepted at CVIP 2025, IIT Ropar.

Education

Cochin University of Science and Technology (CUSAT), Kochi
M.Sc. (5 Year Integrated) in Computer Science – AI & Data Science 2021 – Present
CGPA: 9.03 / 10

References

Dr. Madhu S. Nair, Professor & Head, CUSAT — msn@cusat.ac.in
Mr. Jithin K. S, Senior Technical Lead, KPIT — jithins2@kpit.com
Dr. Rama Krishna Gorthi, Associate Professor, IIT Tirupati — rkg@iittp.ac.in