Balaji S

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Education

SRM Institute of Science and Technology 2023 – Present
Bachelor of Technology in Electronics and Computer Engineering, CGPA: 9.72
Alwin Memorial Public School — Class XII, 85.2% 2023
Alwin International Public School — Class X, 88% 2021

Experience

Research Intern June 2025 – July 2025
National Institute of Technology Puducherry, Karaikal
- Engineered deep learning pipeline using Python, PyTorch, NumPy, and Fourier Analysis for Sea Surface Temperature (SST) prediction
- Collected, cleaned, and analyzed NASA Earthdata satellite datasets to detect anomalies and seasonal trends
- Built visualization dashboards using Matplotlib and Pandas to monitor model performance and forecast accuracy
- Applied Time-Series forecasting and Multi-Head Attention models for enhanced prediction

Embedded Systems Intern Winter 2024
AICTE (Remote)
- Designed and deployed smart home assistant prototype using Arduino, IoT sensors, and relay modules
- Developed real-time data acquisition and processing system for environmental monitoring
- Optimized reproducibility and measurement accuracy by 25% through detailed workflow documentation

Research Intern Summer 2024
Edunet Foundation - AI and Green Skills (Remote)
- Developed ML classifiers (SVM, Random Forest, ANN) to detect Parkinson's and heart disease with 90% precision
- Preprocessed datasets, engineered features, and developed interactive dashboards to improve model performance by 15%
- Tools: Python, Scikit-learn, Pandas, Matplotlib, Seaborn, Jupyter Notebook

Projects

ManualAssist QA System [LangChain, LLaMA-3-8B, RAG, Python, PyPDF2, Transformers, Streamlit, FAISS]
- Developed full-stack Retrieval-Augmented Generation (RAG) Question and Answer system with less than 2 seconds response time
- Implemented multi-format document ingestion including PDF, DOCX, TXT, and web links with over 90% retrieval accuracy
- Built semantic search pipeline using HuggingFace embeddings (all-mpnet-base-v2) and intelligent text chunking for improved relevancy
- Reduced query latency by 35% and enhanced answer accuracy by 40%

AI Interview Mocker [Next.js, Gemini 1.5 Flash, Clerk, PostgreSQL, Vercel]
- Developed AI interview simulator with real-time scoring, adaptive question selection, and voice feedback
- Integrated frontend with Next.js, backend with Gemini, Clerk authentication, and PostgreSQL database
- Deployed responsive application on Vercel accessible on mobile and desktop
- Improved candidate assessment accuracy by 30% using algorithmic scoring and dynamic feedback

Smart Agriculture Monitoring [IoT, Machine Learning, Sensors, Dashboard]
- Developed IoT-ML crop advisory system using 50+ sensor nodes for NPK, temperature, humidity, and rainfall monitoring
- Engineered Machine Learning models achieving 88% prediction accuracy for crop yield recommendations
- Implemented automated alerts for soil moisture and temperature deviations, reducing crop risk by 20%

Skills

Programming Languages: Python, C++, C, JavaScript
Frameworks & Libraries: PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, Streamlit, LangChain
Technologies: Machine Learning, Deep Learning, Web Development, Internet of Things (IoT), Data Structures and Algorithms (DSA)
Tools: Arduino, LabVIEW, EasyEDA, KiCad, PostgreSQL, FAISS

Certifications

- IBM Software Development Professional (Coursera)
- C++ Programming and Verilog Certification
- Data Structures and Algorithms (GeeksforGeeks)
- Introduction to Machine Learning (NPTEL)

Achievements

Department Rank 1 (Semester 3) — SGPA 10 (Semester 3)