

Pragyanshree Sahoo

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SKILLS

Programming Languages: C/C++, python

Tools: VS Code Studio, kaggle, Jupyter Notebook, Windows, Linux, Git, CMake, Docker

Technical Skills: OOPs, SOLID Design Principles, Multithreading, STL, Modern C++ (C++11/14/17/20 Features, Smart Pointers, Lambdas, Concurrency), Gtest framework, ALSA framework, GStreamer framework, Inter-process Communication, DBUS, JSON, XML, Data Science, NumPy, Pandas, Matplotlib, Seaborn, Machine Learning (Regression, Classification, Clustering, Ensemble Models), Deep Learning (Neural Networks, CNN, RNN, LSTM) using TensorFlow, Keras, PyTorch, Model Training, Evaluation, Hyperparameter Tuning, REST-based Model Deployment

Soft Skills: Problem Solving, Teamwork, Leadership, Time Management, Project Management

WORK EXPERIENCE

TVS Motor Company, Bengaluru, Karnataka

07/2024 – Present

Software Engineer

Linux Middleware Framework Development:

- Designed and implemented a scalable Linux middleware framework in **C++** for 2W infotainment clusters.
- Developed 6 framework applications using **DBus** and IPC mechanisms optimizing inter-process communication and service management.
- Designed **C++ APIs** to enable seamless client-service communication.
- Implemented service-oriented architecture (SOA) using **CommonAPI** for modular embedded system development.
- Worked with **ALSA framework APIs** to develop an audio management application for embedded systems.
- Developed camera framework application using **GStreamer APIs** for vehicle cluster integration.
- Implemented **MQTT** in C++ to develop and manage applications for Linux-based systems.
- Optimized **CPU performance by 30%** for resource-constrained hardware environments, ensuring low-latency software execution for real-time infotainment applications.

Diagnostic Management & Automation Tool — *Python, Flask, SQLite, Automotive Diagnostics*

- Developed a **modular Flask application** for managing DIDs, Security Keys, user roles, and admin workflows, improving diagnostics efficiency by **40%**.
- Implemented **authentication**, role-based access control, secure key generation, and structured data storage with SQLite, reducing manual errors by **60%**.
- Built **log analysis** and flashing detection tools with export support (Excel/PDF/XML), enabling faster issue analysis and cutting review time by **50%**.

EDUCATION

National Institute of Technology Karnataka, Surathkal Dec 2020 – Apr 2024

B.Tech. in Mechanical Engineering

CGPA: 7.53/10

Jawahar Navodaya Vidyalaya, Bangalore Urban

Apr 2019 - Apr 2020

Class 12 (PCM)

Percentage: 86%

PROJECTS

High-Performance Multithreaded File Transfer Server — *C++, POSIX Threads, Socket Programming, HTTP*

- Built a **multithreaded TCP file transfer server** in Modern **C++** using **POSIX threads** and non-blocking sockets.
- Implemented a **thread-pool architecture**, **zero-copy transfer (sendfile)**, and thread-safe shared data handling.
- Achieved **high throughput** and scalable performance for concurrent large file uploads/downloads.

AI-Powered Document Search Engine — *Python, NLP, Machine Learning, Deep Learning, FAISS, LLMs*

- Developed an **AI-driven semantic document search system** using NLP embeddings, FAISS vector search, and ML-based retrieval across large PDF/text datasets.
- Implemented **document chunking**, Dense Embeddings, and **LLM-based answer generation** (GPT/LLaMA) for accurate contextual responses.
- Improved retrieval accuracy by **35%** using hybrid retrieval (BM25 + FAISS) and **Deep Learning-based reranking models**.

ACHIEVEMENTS & CERTIFICATIONS

- Solved 800+ problems on **LeetCode** and **GeeksforGeeks**, strengthening core skills in **data structures, algorithms, and problem-solving**.
- Earned certifications in **Embedded Linux Development** and **Advanced C++**, and contributed to **code reviews, documentation, and collaborative hackathon projects**.