

JOSEPH JONATHAN FERNANDES

Software Engineer | C/C++ | Python | Machine Learning | Embedded Systems

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EDUCATION

Goa College of Engineering

2022–2026

Bachelor of Engineering in Computer Engineering (AI/ML Honours)

CGPA: **9.778/10**

EXPERIENCE

Software Engineering Intern — Visteon Technical & Services Centre Pvt. Ltd.

Jul 2025 – Sep 2025

- Achieved 100% branch, statement and function test coverage across 14 AUTOSAR software modules using VectorCAST as part of a seven-member team developing production automotive ECU software.
- Analysed and triaged more than 100,000 MISRA-C, CERT-C and Klocwork static-analysis findings while maintaining a 99%+ deviation approval rate.
- Received a Pre-Placement Offer (PPO) based on internship performance.

PROJECTS

Vāksetu — ISL Sign-to-Text System (Final Year Project) / Python, PyTorch, MediaPipe, ONNX Runtime, FastAPI, WebSockets

- Designed and deployed a real-time Indian Sign Language recognition system using MediaPipe skeletal landmarks with a hybrid BiGRU and Spatial Graph Neural Network architecture.
- Trained on more than 93,000 gesture sequences covering 300 sign classes, achieving 98.33% classification accuracy and 97.84% macro F1-score.
- Reduced model size from 4.2 MB to 1.05 MB using INT8 ONNX quantisation while sustaining 60+ FPS CPU inference at approximately 6.22 ms per frame.
- Migrated the training pipeline to HDF5, achieving a 391× faster dataset loading time and 5.4× faster training epochs.

CmdBridge — Cross-Platform Natural Language Terminal Assistant / C, CMake, Windows, Linux, macOS

- Engineered a cross-platform natural-language terminal assistant that safely maps user intents to native operating-system APIs instead of executing raw shell commands.
- Implemented secure intent parsing, explain-before-execute validation and platform-specific execution layers to mitigate command injection risks.
- Achieved 94% automated test coverage across 211 unit and integration tests using AddressSanitizer, UndefinedBehaviorSanitizer and continuous integration.

High-Performance Collatz Sequence Analyzer / C++, Multithreading, CMake, Statistical Modelling

- Engineered a 21-module multithreaded C++ research platform analysing structural properties of the Collatz conjecture across 50 million integers.
- Achieved a measured 3.3× execution speed-up (11.7 s to 3.6 s) through multithreading and path caching.
- Built reproducible benchmarking and statistical regression pipelines with R^2 values up to 0.999995.

CrowdSense — Real-Time Disaster Detection (HackAura 2025 Winner) / Python, Flask, spaCy, scikit-learn, SQLite

- Developed an NLP-based disaster detection platform combining statistical anomaly detection with spaCy named-entity recognition for real-time incident localisation.
- Integrated automated SMS alerts, interactive incident mapping and SQLite logging into the emergency response pipeline.

TECHNICAL SKILLS

- **Languages:** C, CPP, Python, Java, JavaScript, TypeScript, SQL, Dart, R
- **Frameworks & Libraries:** FastAPI, Flask, React, Bootstrap, Tailwind CSS, Streamlit
- **Machine Learning:** PyTorch, ONNX Runtime, MediaPipe, scikit-learn, spaCy
- **Databases:** MySQL, SQLite, HDF5
- **Developer Tools:** Git, Linux, Windows, CMake, VectorCAST, Klocwork, pytest
- **Concepts:** DSA, OOPS, Embedded Systems, AUTOSAR, MISRA-C, CERT-C, Static Analysis, REST APIs, CI/CD, Unit Testing, Code Coverage, Multithreading, System Design

ACHIEVEMENTS

- GATE Qualified (2025 and 2026) in CSE and DA.
- Winner of multiple Hackathon, Debate, Quiz, Presentation and Competitive Programming competitions at national and state levels.
- First Place HackAura 2025 (National Hackathon) as part of a four-member team for CrowdSense project.
- Top 7 among 80+ teams HackIndia Spark 3 (Goa Region).
- First Place Infofest 2025 (Goa University).

CERTIFICATIONS

- NPTEL Domain Scholar, Star, Megastar and Evangelist (47 courses completed).