

Galaba Vamsi

Software Engineering, Full-Stack Development & AI/ML

+91 7483047846 | galabavamsi12@gmail.com | galabavamsi.github.io/portfolio
LinkedIn: galabavamsi | GitHub: github.com/Galabavamsi

SUMMARY

Results-driven undergraduate at **IIT Bhilai** specializing in **Software Engineering, AI/ML, and Computer Vision**. Proven track record in building scalable systems—from co-founding a full-stack web/mobile startup to engineering GPU-accelerated graphics applications and zero-budget AI simulators (Inter IIT 5th Rank). Experienced in React/Flutter ecosystems, shader programming (GLSL), and distributed cloud infrastructure. Seeking challenging roles in Software Engineering and AI/ML Research.

EXPERIENCE

Research Intern – 6G RIS Simulator & Testbed Development [GitHub] May 2025 – Aug 2025

IIT Bhilai (Advisor: Dr. Arzad Alam)

- Engineered a **zero-budget, open-source** RIS simulator emulating USRPs in LoS/NLoS environments, **saving lakhs of rupees** in physical hardware scaling and pre-deployment testbed costs.
- Published as **First-Author** and **Co-Author** (IEEE INDICON 2025) for novel Smart Radio Environments (SRE).
- Designed and validated a custom two-layer RIS PCB using DipTrace/CST for self-powered RF energy harvesting.

KEY PROJECTS & RESEARCH

Arista Networks Wi-Fi Optimization System (Inter IIT 5th Rank)

- Architected a zero-budget Python simulator and AI-assisted RRM framework using **Dual-CNNs, GNNs**, and **Safe RL**. Bypassed ns-3 constraints to deliver a **+15% throughput improvement**, <2% false positive rate, and 100% DFS compliance.

Human Slop – Co-Founder [Web] [App]

- Co-founded a fully deployed, anti-AI social platform using **React, PostgreSQL, and AWS**, architecting hardware-bound biometric auth and real-time typing forensics to block 100% of synthetic content.

Electron-GNN: ML-Accelerated Quantum Spectroscopy [GitHub]

- Architected a two-tower hybrid Graph Neural Network (GATv2) to predict quantum absorption spectra from molecular geometry, replacing computationally expensive RT-TDDFT simulations with highly optimized inference.

Open-PyFX: GPU-Accelerated Video Effects Suite [GitHub]

- Built an open-source video processing suite in **Python and GLSL**, engineering custom GPU rendering pipelines for CRT emulation, ASCII edge detection, and retro graphics with hardware-accurate 3D LUTs.

Lunar Crater Detection via DEM Terrain Analysis [GitHub]

- Engineered a computer vision pipeline extracting craters directly from Digital Elevation Models (F1-score: 0.839), featuring a **CuPy/CUDA-accelerated** morphology backend yielding a **4.07x speedup**.

AntennaNet: Deep Learning for Inverse EM Design [GitHub]

- Developed a KD-Tree Nearest-Neighbour Anchoring algorithm to constrain inverse EM design gradients, automating 144D search spaces via **Python-MEEP** deployed on **OpenMPI** clusters.

Amazon ML Challenge – Top 3.5% (700 / 20,000+)

- Led multimodal price prediction utilizing **Qwen 2-VL 7B** and a two-tower (ViT + RoBERTa) architecture over 75,000 data pairs, achieving an **SMAPE score of 49.0**.

Serenity Mental Health App [GitHub]

- Developed an open-source **Flutter** mental wellness app integrating CV-based real-time emotion detection, stress-revealing games, guided exercises, and a doctor appointment booking system.

EDUCATION

B.Tech., Mechatronics Aug 2023–May 2027

Indian Institute of Technology Bhilai

Coursework: Data Structures & Algorithms, Object-Oriented Programming, Deep Learning for Computer Vision (DLCV), AI & Machine Learning, Digital Image Processing, Optimal Control.

SKILLS

Software Engineering

Full-Stack Web/App, GPU Shader Programming, Git, Linux, UI/UX

Languages

Python, C/C++, TypeScript, JavaScript, Kotlin, Swift, Dart, Go, GLSL, CUDA

Web, App & Cloud

React.js, React Native (Expo), Node.js, Flutter, PostgreSQL, AWS, OpenMPI

AI & Machine Learning

PyTorch, Graph Neural Networks (GATv2), Safe RL, Transformers (Qwen, ViT), OpenCV, CuPy

Systems & Hardware

Wi-Fi PHY/MAC Modeling, IEEE 802.11k/v, SDR/USRP, PCB Design

ACHIEVEMENTS

1st Place, IIT Bhilai Web Development Competition.

Y Combinator, Accepted into YC Startup School for Human Slop.

5th Rank, Arista Networks Wi-Fi Challenge, Inter IIT Tech Meet 14.0.

Top 1%, JEE Advanced.

Top 3.5%, Amazon ML Challenge 2025.

Top 10 Finalist, Toyota Hackathon.

Academic, 95% in Class 12th, 94% in Class 10th.

PUBLICATIONS

First-Author, "An Open Emulator for Smart Radio Environments" [Link].

Co-Author, "Experience with RF Energy Harvesting-Driven Self-Powered RIS", IEEE INDICON 2025 [Link].

Co-Author, "A systematic literature review on simulation models and deployments for reconfigurable intelligent surfaces", ScienceDirect [Link].