

SAYAK MONDAL COMPUTER SCIENCE STUDENT

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📄 SUMMARY

Software and AI-focused engineer with experience leading development in a university-funded research venture, delivering reliable, scalable systems across AI, web and data-driven applications. Proven ability to translate complex ideas into maintainable software, collaborate effectively across hardware and software teams and take ownership of critical technical decisions. Brings a research-oriented mindset, strong engineering fundamentals and a commitment to building solutions that are stable, ethical and practical in real-world contexts.

💼 EXPERIENCE

Hindustan Aeronautics Limited (HAL), Software & AI Intern 05/2026 – 06/2026 | Bengaluru, India

- Developed and deployed full-stack software modules that modernized internal production databases and digital workflows supporting the manufacture of India's indigenous **Tejas Light Combat Aircraft**.
- Integrated AI-assisted automation, web scraping, data-processing pipelines, and secure database operations into HAL's internal production environment, reducing reliance on legacy and manually operated workflows and contributed through developing internally deployed software designed for practical use by engineering and production stakeholders.
- Presented the implemented solution and its operational capabilities to the senior-management personnel, engineers, and stakeholders, receiving positive feedback regarding its usability and potential production impact.

🎓 EDUCATION

Bachelor of Technology (B.Tech.) in Computer Science And Engineering,

05/2028 | Vellore, Tamil Nadu

Vellore Institute of Technology (VIT), Vellore | CGPA : 8.97

- Core Committee Member at Mozilla Firefox Club and The AI/ML Club (TAM), VIT Vellore.
- Also earned numerous certifications from reputed platforms like **Microsoft, Meta, AWS, HackerRank, Google** and more.

🧠 SKILLS

Programming Languages: C/C++, Java, Python, **Artificial Intelligence:** ML/DL: PyTorch, TensorFlow, Keras, Scikit-Learn | **Computer Vision:** OpenCV, YOLOv8, SegFormer, DeepFace | **NLP & GenAI:** Hugging Face Transformers, LangChain | **Data & Audio:** NumPy, Pandas, Matplotlib, Librosa, SpeechRecognition | **Optimization & Deployment:** ONNX | **AI App Backends:** Flask, FastAPI, Streamlit, **Web Development: Frontend:** HTML, CSS, JavaScript, React.js, Next.js | **Backend:** Node.js, Express.js, Flask, FastAPI | **Databases:** MySQL, PostgreSQL, MongoDB | **DevOps & Deployment:** Git, GitHub, Docker, Kubernetes, Netlify, Vercel, CI/CD

📁 PROJECTS

FinAlly Bot: Full-stack AI-powered financial assistant and quantitative trading terminal featuring JWT + OTP-secured authentication, conversational AI agent orchestration, real-time market data pipelines, and a 20 strategy quant engine with streaming execution.

Tech Stack: FastAPI, Python 3.13, MongoDB Atlas (PyMongo), OpenAI (gpt-4o-mini), Google Gemini 2.5 Flash, yfinance, BeautifulSoup, Flask-SocketIO, Server-Sent Events (SSE), WebSockets, JWT (python-jose), bcrypt, pyotp, slowapi (rate limiting), React.js

Highlights: AI agent pipeline (intent → tools → LLM), real-time market analytics, financial calculators, 20-strategy backtesting engine, SSE/WebSocket streaming, MongoDB memory & scraping, production-ready REST API (44 endpoints). (Created in VIT Hackathon Yantra'26 : Bidathon'26)

Deployed Project: <https://finallybidathon.netlify.app/> 📄 **GitHub:** <https://github.com/ElixerAxiomCalculus/bidathon-proj> 📄

MedBot: Full-stack AI-powered medical chatbot delivering reference-backed responses using a Retrieval-Augmented Generation (RAG) pipeline.

Tech Stack: Flutter Web (Provider, flutter_markdown), FastAPI, Python, Uvicorn, MongoDB, REST APIs, RAG architecture

Highlights: Semantic retrieval over medical knowledge base, context-aware response generation, scalable ASGI backend, web-deployable Flutter frontend.

Deployed Project: <https://medbot.aisayak.in/> 📄 **GitHub:** <https://github.com/ElixerAxiomCalculus/MedBot> 📄

GlobeGenie: Full-stack AI-powered global explorer generating interactive, location-driven travel guides with 3D visualization and contextual AI content.

Tech Stack: React.js, Tailwind CSS, Three.js, FastAPI, Python, Uvicorn, Map/Geo APIs (GMaps API), REST

Highlights: 3D globe/map rendering, AI-contextualized travel info, modular frontend with backend for real-time geographical exploration.

Deployed Project: <https://globejenie.aisayak.in/> 📄 **GitHub:** <https://github.com/ElixerAxiomCalculus/global-genie> 📄

EmotionCam: Real-time web-based multimodal AI application integrating facial emotion recognition, speech-to-text, tone classification, and sentiment analysis using live webcam and microphone streams.

Tech Stack: Python, Flask, Flask-SocketIO, DeepFace, Vosk (offline STT), Hugging Face Transformers (DistilRoBERTa, Twitter-RoBERTa), React.js (Vite), WebRTC APIs, Socket.IO

Highlights: Real-time facial emotion detection via DeepFace, offline speech recognition using Vosk STT model, transformer-based tone & sentiment classification, WebRTC-powered live media capture, bi-directional streaming with Flask-SocketIO, privacy-first architecture (local processing, no external data transfer), dynamic dashboard with emotion bars, confidence scores & tone tags.

GitHub: <https://github.com/ElixerAxiomCalculus/Emotion-Cam> 📄

★ ACCOMPLISHMENTS AND PUBLICATIONS

Publication: **HyperSpectrum Geometry: A Riemannian Hyperspherical Framework for Curvature-Adaptive Text Classification**, Neural Computing and Applications, Springer Nature, 2026

Sole Author | Independently developed and evaluated a geometric AI framework; accepted in a **Q2 AI journal** with **Impact Factor 4.8** and ranked **#11** by [Research.com](https://www.research.com) 📄 among Machine Learning and AI journals.

Student Startup Venture Grant Recipient | VIT Vellore

11/2025

- Awarded Rs. 4L in seed funding to develop a AI-based early eye- disease detection system.
- Selected from a pool of 150+ applicants and teams based on technical feasibility and business viability.