

Rahul Saravanan

NITK, Surathkal, India

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Education

NIT Karnataka

2023 – 2027

B.Tech in Information Technology - CGPA: 8.64/10, **SGPA: 9.6/10**

India

International Indian School

10th Grade: **94.6%**, 12th Grade: **93.4%**

Saudi Arabia

Technical Skills

Programming Languages: C++, JavaScript, Python, C, Java, HTML, CSS

Web Development: React, Node.js, Next.js 15, Express.js, REST API, JWT Authentication, UI/UX Design, Figma, HTML/CSS

AI & Data Science: Machine Learning, Natural Language Processing (NLP), Deep Learning, Computer Vision, ECAPA-TDNN, OpenAI Whisper, YOLOv5, CNN, KeyBert, Vitest, React-Native

Backend & Database: FastAPI, Flask, Prisma ORM, PostgreSQL, API Design, Data Modeling

Developer Tools: Git, Postman, Linux, Unit Testing, CI/CD

Experience

Full Stack Web & App Development Intern

May 2025 – July 2025

Kalppo Technology Pvt. Ltd.

- Built key features for a **React Native** school app, including **live camera capture**, image annotation with **SVG**, and a full **document evaluation flow** integrating **frontend** and **backend** systems.
- Refined the **React** website to align with **Figma** designs; improved **mobile responsiveness** of the site; introduced **autofill logic**, **file upload flows**, and better **error handling** across assessment-related forms.
- Collaborated cross-functionally to resolve **API integration** issues, introduced **unit tests**, and shipped **UI/UX enhancements** under tight scope changes and evolving feature priorities.

Projects

Sonexis - Voice Authentication System | Machine Learning, Full Stack 🌐

April 2025

- Built a secure voice authentication system using **ECAPA-TDNN** speaker recognition model and **OpenAI Whisper**, achieving 94% accuracy in voice verification through cosine similarity of embeddings.
- Developed full-stack implementation with **React** frontend and **FastAPI** backend, integrating **JWT** authentication and **Prisma ORM** for user management.
- Implemented End-To-End **Voice to Visualization** based on a PostgreSQL backend including dynamic graph generation and Inference suggestion.

Game Boy Color Emulator | OS, Systems Programming 🌐

March 2025

- Engineered a full-fledged **Game Boy Color emulator** from scratch in **C**, covering **CPU**, **GPU**, **memory**, **audio**, and **cartridge emulation** to run commercial GBC titles.
- Designed a **custom desktop GUI using ImGui**, enabling real-time debugging, graphics inspection, and seamless ROM loading.
- Led a collaborative group project, contributing to all core modules and ensuring **accurate hardware timing and compatibility** across a wide range of games.

Vision Kinect | Deep Learning and CNN 🌐

May 2024

- Developed a hands-free, web-based Tetris game using live hand-gesture recognition powered by a **YOLOv5**-based **CNN** model.
- Enabled an accessible and innovative gaming experience, demonstrating practical applications of **computer vision** for hands-free interactions.
- Utilized **Python**, **React**, **OpenCV**, and **YOLOv5** to implement real-time **gesture detection** at 30+ FPS while overcoming challenges of optimization under tight deadlines.

Past Achievements

HackToFuture 3.0 Hackathon Winner (UI/UX)

April 2025

SJEC Mangalore, India

- Developed **Sonexis** voice authentication system in 36-hour hackathon as **sole front-end developer**, implementing real-time visualization capabilities and securing **Best UI/UX Design** award among 65 competing teams
- Optimized user experience through efficient **API integration**, connecting ML-powered backend with responsive frontend components while maintaining **94% authentication accuracy** and implementing complex **voice verification workflows**