

# A Y Deepesh Raj



Bachelor of Technology  
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## EDUCATION

### •Bachelor of Technology in Computer Science and Engineering

2022-26

Vellore Institute of Technology, Chennai

CGPA: 8.21

## TECHNICAL SKILLS AND INTERESTS

**Programming and Web:**Python, Java, C/C++, SQL, Git, HTML, CSS, Figma, Power BI, Tableau

**AI/ML & GenAI:** Machine Learning, Transformers, NLP, LangChain, LLM Agents, Topic Modeling, Explainable AI, Exploratory Data Analysis

**Libraries Frameworks:** PyTorch, TensorFlow, Scikit-learn, OpenCV, Pandas, Numpy, Matplotlib

**Cloud Deployment:** Azure AI Services, Redis, Render, Streamlit

## EXPERIENCE

### • Software Developer Intern - FLSmidth

June - August 2024

Computer Vision and Image Analytics

Chennai

- Built image processing pipelines for mining equipment defect detection, using pixel-level comparison, disparity analysis, and segmentation to identify contamination and structural anomalies with high accuracy.
- Automated 2D anomaly localization (dirt, residue, deformities) with OpenCV watershed algorithms, enabling actionable insights that improved maintenance and QA efficiency by 40%.
- Explored 3D reconstruction methods (COLMAP, Meshroom, MiDaS) to complement 2D analysis, enhancing structural integrity checks in select cases.

## PERSONAL PROJECTS

### •Smart Safe Driving App [GitHub]

Tech Stack: Python, Flask, OpenCV, dlib, YOLOv4, FER, pytsx3

- Developed a real-time AI-driven driver monitoring system to enhance road safety by detecting drowsiness, emotions, and phone usage while driving
- Implemented Eye Aspect Ratio (EAR) for sleep detection, YOLOv4 for phone usage monitoring, and FER for emotion recognition with real-time Flask dashboard and audio alerts

### •MeetMate – AI Meeting Assistant [GitHub]

Tech Stack: Azure AI Speech Services, OpenAI GPT-4o, Google Cloud APIs, Python, Streamlit, Tailwind CSS

- AI tool to transcribe meetings, generate MoMs, and auto-schedule follow-ups into Google Calendar.
- Combines diarized speech recognition with GPT-based summarization and real-time meeting analysis.

### •AskLegal.ai – AI Legal Assistant [Demo]

Tech Stack: Python, Streamlit, Redis, RAG (InLegalBERT + IPC), Bi-GRU, Gemini 2.0 Flash

- Legal chatbot using RAG over IPC and court cases; generates documents and predicts case judgments
- Deployed via Streamlit with Gemini 2.0 Flash for NLU and Bi-GRU neural models, enhancing legal research efficiency and decision support.

### •Water-Quality-prediction-BPA-prediction [GitHub]

Tech Stack: IoT, Assembly Language, Python, Microcontrollers (ESP8266/Arduino), pH/TDS/Turbidity Sensors, Scikit-learn, Cloud IoT

- Developed an IoT-enabled real-time monitoring system for water quality, integrating pH, TDS, and turbidity sensors with microcontrollers
- Predict the Bisphenol A (BPA) contamination risk, providing cloud-based visualization and alerts for unsafe water conditions

### •EVXpert – AI-Powered EV Companion App [GitHub]

Tech Stack: Python, TensorFlow, Scikit-learn, PostgreSQL, DynamoDB, React Native, Node.js, Tailwind CSS, AES Encryption

- Developed an AI-driven EV companion app with real-time sensor data integration for battery health monitoring, predictive maintenance, trip-based planning, and vehicle security.
- Implemented ML models for battery degradation prediction and anomaly detection, with AES-encrypted data exchange and real-time security alerts.

### •Farm-X-Change – Agri-Trading Portfolio Platform [GitHub]

Tech Stack: HTML, CSS, JavaScript

- Developed a user-centric platform enabling farmers, distributors, and buyers to exchange agricultural products seamlessly.
- Designed an intuitive and visually appealing front-end interface, ensuring efficient navigation and engaging user experience.

## ACHIEVEMENTS AND CERTIFICATIONS

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### •Patent Publication – September 2025

- **Title:** An Intelligent IoT-Based Unauthorized Animal Detection and Classification System for a Vehicle and Method Thereof
- **Application No.:** 202541079463 (Published under Indian Patent Office)
- Developed an IoT & ML-based system with multi-sensor fusion to detect and classify unauthorized animals inside vehicles, preventing safety hazards and damage.

### •Semifinalist – Raptee CodeVolt'25 Hackathon (EVXpert AI App) – March 2025

- Proposed AI-powered EV companion app for battery health, predictive maintenance, trip planning, and security using Python, TensorFlow, and AES Encryption.

### •GPT4o: Code & Conquer – November 2024

- Secured certification from InferAllAi for demonstrating applied problem-solving and AI model fine-tuning skills.

### •AWS Certified Cloud Practitioner, Solutions Architect & Developer (Udemy) – June 2025

- Completed Udemy cloud certifications covering AWS fundamentals, architecture design, and developer best practices.

### •Spoken Tutorial – C, C++ & Python Training (IIT Bombay) – April 2023

- Earned certifications for successfully completing training in C, C++ and Python 3.4.3 under IIT Bombay's Spoken Tutorial program.