

# VISHAL KUMAR

**Address:** Spice Garden, AECS Layout, Bengaluru – 560037.

**E-mail ID:** [viku22aiml@cmrit.ac.in](mailto:viku22aiml@cmrit.ac.in),  
[vishalgsu@gmail.com](mailto:vishalgsu@gmail.com)

**Mobile Number:** +91-8789728908

**LinkedIn:** <https://www.linkedin.com/in/vishal-gsu>

**GitHub:** <https://github.com/Vishal-gsu>



## CAREER OBJECTIVE

A highly motivated AI/ML and Data Science aspirant skilled in Python, machine learning, deep learning, and Generative AI. Seeking a challenging role to apply technical expertise to solve real-world problems and contribute to innovative, data-driven projects. Committed to continuous learning and staying current with emerging technologies.

## EDUCATIONAL QUALIFICATION

- **Bachelor of Engineering – Artificial Intelligence and Machine Learning**

CMR Institute of Technology, AECS Layout, Bengaluru

CGPA: 7.63, 2026 (Pursuing)

- **12<sup>th</sup> Grade - Science**

Lyceum international school, Muzaffarpur , Bihar

79.4%, 2022

- **10th Grade – CBSE**

DAV Public School, Muzaffarpur, Bihar

82%, 2020

## TECHNICAL SKILLS

- **Programming & Data:** Python, Java, SQL, Pandas, NumPy
- **AI/ML Frameworks:** TensorFlow-Keras, PyTorch, Scikit-learn, LangChain, LangGraph, OpenCV, MediaPipe
- **AI Specialization:** Machine Learning, Deep Learning (CNNs), Computer Vision, NLP, Generative AI, RAG
- **Databases (SQL/NoSQL/Vector):** MySQL, MongoDB, FAISS, ChromaDB, Supabase
- **Deployment & MLOps:** FastAPI, Streamlit, Docker, Git, GitHub
- **Data Visualization:** Tableau, Power BI
- **Development Tools:** VS Code, Cursor, Jupyter Notebook, Google Colab, N8N
- **Operating Systems:** Windows, Linux

## PROJECTS

### Scout Vision: AI-Powered Blind Assistive System

- **Description:** Built an end-to-end, low-latency assistive system streaming live video from an Expo React Native client to a GPU-backed FastAPI server for real-time scene understanding and safety alerts. Fine-tuned and deployed a PyTorch YOLOv8 model with quantization and batching to meet strict latency and accuracy targets for live video inference. Integrated contextual reasoning (LangChain + Gemini Pro) and in-app TTS to deliver contextual, spoken guidance; owned evaluation, CI, and deployment for reliable field use.
- **Tech Stack:** Expo, React-native, Python, FastAPI, PyTorch, YOLOv8, Model Fine-Tuning, Quantization, LangChain, Gemini Pro, Git, Vosk.

### Deep Learning System for Real-Time Sign Language Interpretation

- **Description:** Designed a low-latency sign language recognition engine, leveraging a custom-trained neural network to classify and translate complex hand gestures from a real-time video stream with high accuracy. Engineered a sophisticated feature extraction pipeline using MediaPipe to process video frames and generate high-dimensional, 3D spatial coordinate data representing hand landmarks for model ingestion. Deployed a Multi-Layer Perceptron (MLP) model, trained on the extracted landmark data, to perform robust, multi-class classification of signs, achieving minimal inference time for a seamless user experience.
- **Tech Stack:** Python, TensorFlow, Keras, OpenCV, MediaPipe, Scikit-learn, NumPy.
- **Github:** [https://github.com/Vishal-gsu/sign\\_lnguage](https://github.com/Vishal-gsu/sign_lnguage)

### Offline RAG Chatbot

- **Description:** Engineered a fully offline **Retrieval-Augmented Generation (RAG)** chatbot for semantic querying of private PDF documents. Implemented a data processing pipeline for text extraction and vectorization using a local embedding model (all-MiniLM-L6-v2), storing indices in a FAISS vector database for efficient retrieval.

Developed a Streamlit-based UI with persistent session history and integrated conversational memory to support multi-turn, context-aware dialogue.

- **Tech Stack:** Python, Stable Diffusion, U-Net, TensorFlow, Gradio UI
- **Github:** [https://github.com/Vishal-gsu/offline\\_chatbot](https://github.com/Vishal-gsu/offline_chatbot)

#### Agentic AI for Deep Research

- **Description:** Developed a **multi-Agentic AI architecture** for deep research. Allowed customizable research depth, structure, and clarifying questions for personalization. Agent stack designed to handle layered research tasks of generating SERP queries, scrape web results, generate learnings and append it to a stack of knowledge. Displayed results with citations. Implemented Web scraping, authorization, backend automation, and database access.
- **Tech Stack:** Python, LangChain, Supabase, Vector DB, Google-OAuth

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### CO-CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES

#### Hackathons/Competitions

- Participated in the “Full Stack Fiesta: Innovate, Build, Deploy” hackathon organized by CMR Institute of Technology.

#### Patents

- AI Powered Pet Monitoring System - Developed a smart system using AI and computer vision to monitor pet behaviour, detect health anomalies and send real time alerts to owners. Filed for patent protection to secure innovation in intelligent pet care technology.

#### Seminars and Workshops

- Attended a workshop on “Patent Drafting” organized by the Department of Artificial Intelligence and Machine Learning in association with CMRIT Institution’s Innovation Council.
- Machine Learning Crash Course – Google AI. Completed intensive training on supervised learning, model evaluation, and TensorFlow basics.

#### Online Courses and Certifications

- Certified in “Complete Python Developer in 2023: Zero to Mastery” from Udemy.
- Certified in Generative AI Fundamentals – GeeksForGeeks.
- Completed TensorFlow Developer Certificate Course.

#### Cultural Activities

- Volunteered in college cultural and annual fest, “CULTURA 23”.

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### AWARDS AND ACHIEVEMENTS

- Analyzed a complex dataset and presented actionable business insights using Tableau in a Deloitte virtual experience on Forage.

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### PERSONAL DETAILS

Date of Birth	: 12/02/2005
Gender	: Male
Nationality	: Indian
Permanent Address	: Athri, Runni Saidpur, Sitamarhi, Bihar, pincode : 843311
Linguistic Competencies	: Hindi, English
Hobbies	: E-sport, Travelling, Reading Books, Cooking