

KARTHICK

Python Developer | Backend & AI Systems

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PROFESSIONAL SUMMARY

Python Developer focused on backend development, building RESTful APIs with FastAPI, and implementing Generative AI pipelines. Experienced in developing Retrieval-Augmented Generation (RAG) systems using LangChain and ChromaDB, creating autonomous terminal agents using FastMCP (Model Context Protocol), and designing automated workflows with n8n. Skilled in core Python development, MySQL database integration, and building reliable developer tools.

TECHNICAL SKILLS

Backend & APIs:	FastAPI, RESTful APIs, Pydantic
Languages & DB:	Python (Core, OOP, Scripting), MySQL
AI & Automation:	LangChain, ChromaDB, RAG Pipelines, Vector Search, FastMCP (Model Context Protocol), n8n, Ollama
Audio & Speech:	OpenAI Whisper / faster-whisper (STT), ElevenLabs API (TTS)
Developer Tools:	Git, GitHub, Linux (Bash scripting), Postman

TECHNICAL PROJECTS

Terminal AI Agent with MCP | Python, FastMCP, CLI | [GitHub Repository](#) Open Source

- Developed an interactive terminal AI assistant in Python powered by the Model Context Protocol (FastMCP) for conversational system interaction.
- Implemented custom MCP tools for file system management (read_file, write_file, list_files), in-file text search, and shell command execution.
- Integrated safety controls, interactive user confirmation flags, and command timeout handling to ensure secure terminal command execution.

Retrieval-Augmented Generation (RAG) Service | Python, FastAPI, LangChain, ChromaDB | [GitHub: RAG](#) Open Source

- Built a document question-answering service using Python, FastAPI, LangChain, and ChromaDB to ingest and search custom documents.
- Implemented text chunking with RecursiveCharacterTextSplitter and vector search to retrieve relevant context passages.
- Exposed RESTful API endpoints (/upload, /ask) with Pydantic request validation for automated document ingestion and question answering.

AI Voice Assistant Backend | Python, FastAPI, Whisper, ElevenLabs | karthicka.me Personal Project

- Developed a Python backend using FastAPI to orchestrate voice interactions, speech-to-text processing, and speech synthesis.
- Integrated faster-whisper with voice activity detection (VAD) for audio transcription and ElevenLabs API for speech output.
- Structured conversational session flow to handle context retention and natural multi-turn dialogue.

PROFESSIONAL EXPERIENCE

IoT Engineering Intern — Titan Leap Center (Naandi Foundation) Chennai, India | Internship

- Learned fundamental principles of IoT hardware architectures, microcontroller pinouts, and sensor interfacing.
- Assisted in setting up, wiring, and testing basic environmental sensor modules for preliminary data collection.
- Observed and tested serial communication data feeds between microcontrollers and host computers.

ACHIEVEMENTS & CERTIFICATIONS

1st Place — AI Agent Automation Challenge | Inter-College Technical Symposium Winner

- Secured 1st place among 15+ competing teams by designing and demonstrating an automated agentic workflow using n8n and Python integrations.

HACKFORGE 2025 — National Level 24-Hour Hackathon | DG Vaishnav College & Tech Knots Dec 2025

- Selected and participated in a 24-hour national hackathon, collaborating on rapid software prototyping and solution delivery.

Cyber Security Certification (Grade A) | IBM SkillsBuild & ICT Academy Mar 2026

- Completed certification course on cybersecurity fundamentals, network security protocols, and system defenses.

EDUCATION

B.Sc. in Computer Science — Agurchand Manmull Jain College 2023 – 2026 | Chennai, India