

Karthik Nair

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SKILLS & INTERESTS

- **Programming & Development:** Python, C++, Bash, FastAPI, Flask, RESTful APIs
- **Generative AI:** Prompt Engineering, Large Language Models (LLMs), LangChain, LangGraph, RAG, Multimodal Systems (Text, Voice)
- **Data Science:** Pandas, NumPy, Nvidia MatX, Matplotlib, Seaborn, Plotly, Scikit-learn, TensorFlow, PyTorch, spaCy, NLTK, OpenCV
- **Cloud & Data Engineering:** Google Cloud Platform (GCP), AWS, Azure, Docker, Kubernetes, CI/CD (GitHub Actions, Jenkins), Linux (RHEL, Debian), Data Pipelines, ETL/ELT, Apache Spark, Apache Beam, SQL, Firestore
- **Tools & Technologies:** Git, BeautifulSoup, Scrapy, Selenium, GitHub, Jupyter, VS Code, WeasyPrint, FFmpeg, Google Gemini
- **Soft Skills:** Client Communication, Technical Writing, Cross-functional Collaboration, Information Retrieval
- **Interests:** Open Source Contribution, Synthesizer, Calisthenics, Reading, Writing

EDUCATION

Indira Gandhi National Open University, New Delhi	January 2025 - Present
Master of Computer Applications	
Vivekananda Institute of Professional Studies Guru Gobind Singh Indraprastha University, New Delhi	July 2021 - June 2024
Bachelor of Computer Applications	9.2 CGPA

WORK EXPERIENCE

AI Engineer	Aug 2024–Present
Tata Consultancy Services - Noida, Uttar Pradesh	
PoC to Production Deployment	
<ul style="list-style-type: none">• Led the transition of 3 AI/Data Engineering projects from PoC to production for a major U.S. pharmaceutical client, including a data optimisation pipeline that boosted processing speed by 60%. Enabled 200+ researchers to access real-time analytics with zero downtime.	
AI Systems for Data Insights and Workflow Optimization	
<ul style="list-style-type: none">• Engineered an AI system for large pharma & clinical datasets that generates real-time code to produce graphs and answer statistical queries using LLM-optimised schemas that cut analysis time by 90%. Integrated into the client's SageMaker setup as FastAPI endpoints.• Built a conversational Retrieval-Augmented Generation (RAG) system using LangChain and LLMs over the client's documentation and codebase, streamlining information retrieval for everyone involved.• Assisted in the development of an end-to-end transcription system that uses Azure OpenAI Whisper, FFmpeg, and GPT-4o with 95%+ accuracy for clinical audio and automated the conversion of speech to structured documents with real-time summarisation and reference extraction.• Developed a reusable and scalable Python package to seamlessly integrate AI capabilities, including multimodal support and diverse LLMs, enabling rapid adoption of advanced AI features across teams.	
Automating Workbook Generation for Clinical Trials	
<ul style="list-style-type: none">• Designed algorithmic solutions using openpyxl to automate the creation of complex, interconnected workbooks, improving data engineering efficiency and cutting manual effort by 95% (from ~5 minutes to under 15 seconds per workbook) with 100% accuracy.	
R-to-Python Migration & API Development	
<ul style="list-style-type: none">• Assisted in the partial migration of an R codebase to Python to improve maintainability, performance, and team accessibility. Developed FastAPI endpoints to expose core functionalities as scalable web services.	

AWARDS

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| • 2x TCS Technical Excellence Award – for impactful contributions to enterprise AI systems | 2025 |
| • Bug Bounty Award from Google Buganizer Android 12/13 | 2021 |