

# MANAS TIWARI

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## Experience

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### Siemens Healthineers

Jan. 2024 – Present

*Software Developer / Automation* | C#, .NET, Selenium, Python, Jenkins, LangChain

Knoxville, TN - USA

- **AI & LLM Development:** Developed an end-to-end **Retrieval-Augmented Generation (RAG)** pipeline using LangChain, Hugging Face Transformers, and ChromaDB, integrating e5-large-v2 embeddings for efficient semantic retrieval.
- Fine-tuned Mistral 7B LLM with LoRA/QLoRA techniques to adapt it for domain-specific tasks, reducing training costs while maintaining model performance. Integrated the fine-tuned model with the RAG pipeline to improve domain accuracy and context recall.
- Explored prompt engineering, model evaluation, and deployment best practices, laying the foundation for production grade AI systems.
- Led modernization of UI automation frameworks by replacing legacy UI-based scripts with direct API calls, resulting in a 75% reduction in CI test execution time and improving code reliability.
- Built and maintained CI/CD pipelines in Jenkins, achieving an 80% reduction in build execution time through automation and parallelization. Also conducted performance and stress testing using JMeter, identifying bottlenecks and validating system scalability and reliability.
- Developed an automated analyzer for over 1,000 unit/integration tests, improving code quality by 30% through structured reporting and analytics.

### University of Tennessee

Aug. 2022 – Dec. 2023

*Graduate Teaching Assistant* | C++, Python, Data Structures and Algorithms

Knoxville, TN - USA

- Developed an automated grading system using Shell Scripting and Python, reducing grading time by 70% and increasing accuracy by 90%.
- Applied parallel programming with MPI (OpenMPI), improving computation performance by 30%.

### Cognizant

Apr. 2022 – Jul. 2022

*Programmer Analyst Intern* | C++, TFS, Microsoft Azure

Bangalore, KA - India

- Improved software reliability and reduced deployment time by **20%** using advanced testing and Azure DevOps tools.
- Contributed to CI/CD automation with Jenkins, enabling rapid and reliable feature deployments.

## Projects

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**Domain-Specific RAG Chatbot** | LangChain, ChromaDB, Hugging Face, LoRA, Python

2025

- Built a RAG pipeline integrating e5-large-v2 embeddings and ChromaDB for efficient vector search and retrieval.
- Fine-tuned Mistral 7B using LoRA/QLoRA, achieving higher domain accuracy and reduced hallucination rates.
- Implemented prompt templates, retrieval chains, and evaluation loops to improve response relevance and factual accuracy.

**Sign Language Recognition using CNN** | Python, Machine Learning, MATLAB, OpenCV

Dec. 2023

- Developed a real-time sign language recognition system achieving 90%+ accuracy using CNNs and OpenCV for gesture detection.

## Certifications

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Databricks | *Generative AI Fundamentals, AI Agent Fundamentals*

Feb. 2026

AWS CCP | *AWS Certified Cloud Practitioner*

Apr. 2025

AZ 900 | *Microsoft Certified Azure Fundamentals*

Aug. 2022

## Technical Skills

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**Programming Languages:** Java, Python, C++, C#

**AI / ML Frameworks:** PyTorch, TensorFlow, Transformers, LangChain, LoRA/QLoRA

**MLOps & Deployment:** FastAPI, Jenkins, Git

**Cloud & Databases:** AWS, Azure, SQL Server, NoSQL

**Web/Other:** ReactJS, HTML/CSS, JavaScript, .NET Framework, REST/SOAP APIs

## Education

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University of Tennessee

Knoxville, TN

*Masters Degree in Computer Science — Machine Learning*

Acharya Institute of Technology

Bangalore, KA

*Bachelors Degree in Information Science and Engineering*