TRINATH GUNDLA

AI Software Engineer | Python | RAG | LangChain | GenAI
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PROFESSIONAL SUMMARY

AI Software Engineer with 2+ years of experience designing and deploying production-grade AI systems using Python, LangChain, and Retrieval-Augmented Generation (RAG). Proven expertise in building multimodal AI pipelines, semantic search, vector similarity systems, and AI automation solutions for enterprise use cases. Strong background in AI workflow orchestration, REST-based inference services, and scalable AI system design.

TECHNICAL SKILLS

Generative AI: GenAI applications, Agent-based AI systems, LLM-powered workflows

Prompt Engineering: Prompt design, Context management

AI Frameworks: Retrieval-Augmented Generation (RAG), LangChain,LangGraph, Ollama

Computer Vision & OCR: OpenCV, Image preprocessing, Tesseract OCR

Programming: Python

AI Backend & APIs: FastAPI, Flask, REST APIs

Data Processing: Pandas, NumPy, Data cleaning

Databases: MySQL, MongoDB

Developer Tools: Git, GitHub, Postman

PROFESSIONAL EXPERIENCE

SOFTWARE ENGINEER - AI & GENAI SYSTEMS
Hyderabad | Dec 2023 - Present

Multimodal Defect Intelligence System - Pratt & Whitney
Technologies: Python, LangChain, Ollama Vision, RAG, Flask, MongoDB, REST APIs

- Developed a multimodal AI chatbot to identify visually and textually similar historical defects using vision-based and text-based RAG pipelines.
- Designed a hybrid image-text retrieval workflow to compute contextual similarity between new defect inputs and historical defect cases.
- Integrated Excel-based defect logs and unstructured documents for real-time semantic and visual comparison.
- Implemented REST APIs to orchestrate defect ingestion, multimodal retrieval, and summarized AI-driven insights for validation engineers.
- Improved matched defect case accuracy by approximately 30 percent and reduced investigation time by 35 percent, significantly enhancing cross-case analysis efficiency.

Mining Maps Deduplication System - VALE

- Designed and implemented a multimodal LLM-based deduplication system to automatically detect and remove redundant mining maps.
- Used CLIP embeddings to represent visual map data and performed similarity search using a FAISS vector database.
- Built an AI-driven deduplication pipeline that combined embedding-based similarity search with traditional comparison logic, achieving a 90% reduction in duplicate maps.
- Optimized system performance by leveraging vector-based retrieval, significantly reducing manual verification effort and storage usage.
- Delivered a cost-saving solution that resulted in approximately $450K in annual savings, while improving data integrity and retrieval accuracy.

AI Verification & Validation Platform
Technologies: Python, LangChain, RAG, Ollama, MySQL, REST APIs

- Built an AI-powered Verification & Validation (V&V) platform to automatically generate structured test cases from technical documentation.
- Leveraged LangChain with RAG pipelines to enhance contextual understanding and output accuracy.
- Integrated vector databases and semantic similarity retrieval to improve test case matching and traceability.
- Optimized LLM responses by feeding contextual documents via RAG, increasing test case relevance and precision by 25%.
- Implemented MySQL-backed validation workflows and REST APIs, reducing data inconsistencies by 25% and improving response performance by 20%.

Software Engineer | Anddhen Group
Remote | Mar 2023 - Nov 2023

Automatic Parts Data Intelligence System
Technologies: Python, Pandas, Tesseract OCR, OpenCV

- Developed an automated data extraction and standardization system to convert unstructured scanned PDFs and images into structured formats such as XML and Excel.
- Built automated pipelines using Python and Pandas to extract, clean, and normalize parts data across multiple file formats.
- Applied OCR preprocessing techniques including noise removal, thresholding, and contour detection using Tesseract and OpenCV to improve text extraction accuracy.
- Designed validation and transformation workflows that reduced manual data formatting effort by 40%.

INTERNSHIP EXPERIENCE

Python & NLP Intern - Zee Media
Jun 2021 - Sep 2021

- Developed a multimedia automation application that processed video inputs to automatically extract audio, convert speech to text, and clean the generated text using NLP techniques.
- Implemented Named Entity Recognition (NER) using SpaCy to tag and extract key information from transcribed multimedia content.
- Applied text preprocessing and normalization using NLP libraries to improve extraction accuracy before entity tagging.
- Automated the export of structured NER results into Excel formats and integrated the complete workflow into a Tkinter-based desktop application.

CERTIFICATIONS & AWARDS

- Most Valuable Performer **- Bronze**
- AI Agents Intensive Course **- Google**
- Crash Course on Python **- Coursera**

Education

Vidya Jyothi Institute of Technology, B.Tech - Information Technology
Hyderabad, June 2019 - May 2023