# DHANUSH G

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## PROFILE

AI/ML & Generative AI Engineer | I design scalable AI solutions that integrate machine learning, large language models, and agent-based systems to solve real-world problems. My work focuses on automating workflows, predicting outcomes, and enhancing user experiences through conversational interfaces and generative tools. Passionate about bridging data and automation, I thrive at the intersection of language, logic, and learning.

## EDUCATION

Master of Technology in Software Engineering                                                                June 2024
VIT, Vellore,

## SKILLS

- **Programming Languages:** Python
- **API Development:** FastAPI, REST APIs
- **Machine Learning & AI:**
    - **ML:** Scikit-learn
    - **Deep Learning**: TensorFlow, Keras
    - **Neural Networks:** ANN, RNN, LSTM, GRU, Transformers
    - **Natural Language Processing (NLP):** NLTK, spaCy, Text Preprocessing, Summarization
- **Generative AI & LLMs**:
    - LangChain, LangSmith, Langserve
    - **AI Agents & tools**: CrewAI (AI Agent framework), LangGraph (stateful multi-agent orchestration)
    - **Web UI** (for ML & LLM apps): Streamlit
    - **Large Language Models:** OpenAI, LLaMA, Google-Gemma, Groq, Ollama
    - **Hugging Face:** Transformers library (e.g., BERT, all-MiniLM-L6-v2 for embeddings)
    - **RAG Techniques**: Retrieval-Augmented Generation(RAG), Hybrid Search RAG, Conversational RAG.
    - **LLM Fine-Tuning:** LoRA, QLoRA, Lamini
    - **Vector Databases:** FAISS, ChromaDB
    - **Graph Databases:** Neo4j, Cypher Query Language
- **Data Handling & Visualization**: Pandas, NumPy, Matplotlib, Seaborn
- **Model Deployment & DevOps**: Docker, AWS (Bedrock, Lambda, EC2, S3, API Gateway)
- **Version Control & Collaboration:** Git, GitHub, Jira
- **Authentication & Authorization:** OAuth2, JWT (JSON Web Token)

## WORK EXPERIENCE

**PGET - Renault Nissan Technology and Business Centre India**                January 2024 - Present
**AI/ML and Generative AI Engineer**
I develop AI-powered tools and applications for my project/team, leveraging machine learning, large language models, and agent-based systems to automate workflows, predict outcomes, and enhance user experiences. My work involves creating scalable, production-ready solutions that bridge the gap between raw data and intelligent automation across diverse projects.

## CERTIFCATES

- **Internship Certificate -** Renault Nissan Technology and Business Centre.

# PROJECTS

## Multi-Agent IT Assistant with Hybrid Search RAG

- Developed a Multi-Agent IT Assistant using **CrewAI** and **GEMMA 2**, incorporating **hybrid search RAG** (semantic + keyword retrieval) for answering IT queries from internal documents like SOPs and troubleshooting guides.
- Implemented **FAISS + HuggingFace Embeddings (MiniLM)** to enhance document retrieval accuracy and integrated fallback support from Wikipedia for unanswered queries.
- Leveraged **Streamlit** for a user-friendly interface, enabling PDF uploads, query entry, and API key authentication, facilitating seamless interaction with the system.
- Built with **LangChain** to manage the RAG pipeline, coordinating multiple **AI agents** for document ingestion, retrieval, answer generation, and validation, automating IT ops workflows.

## Serverless Blog Generator with Meta's LLaMA 3 on AWS

- Built a serverless blog generation system using Meta's **LLaMA 3** (70B Instruct) via **AWS Bedrock** to generate blog posts from topic inputs, fully leveraging AWS-native services.
- Implemented **AWS Lambda** for running the blog generation logic, **AWS API Gateway** for handling topic input, and **Amazon S3** for storing the generated blog posts in text format.
- Enabled scalable, cost-efficient blog generation using a fully **serverless architecture** (no EC2/containers) and ensured smooth testing with **Postman** for rapid local API validation.

## Conversational RAG System for PDF Documents with Stateful Chat History

- Developed a **stateful Conversational AI** system combining **Retrieval-Augmented Generation** (RAG) and chat history for dynamic, context-aware Q&A with PDF documents.
- Integrated **LangChain** to manage document retrieval and generation, and **LangSmith** for real-time monitoring and debugging of workflows.
- Leveraged **ChatGroq** (Groq API) for fast, contextualized responses, and used **Hugging Face embeddings** and **Chroma** for efficient semantic search and retrieval.
- Built with **Streamlit**, providing an interactive web interface for PDF uploads, Q&A, and conversation tracking for an enhanced user experience.

## Jira Bug Status Prediction and Recommendation System

- Developed a deep learning model using an **Artificial Neural Network (ANN)** built with **Tensorflow & Keras**, achieving an **87% accuracy** in predicting Jira bug statuses based on bug descriptions.
- Implemented smart recommendations leveraging **TF-IDF and cosine similarity** to suggest similar bugs and recommend fixes, enhancing debugging efficiency.
- Integrated **Jira** and **GitLab**, scraping GitLab links from Jira tickets and fetching commit details, code diffs, and file changes to provide comprehensive bug insights.
- Deployed a **Dockerized** web app within the company's private network using **Flask**, providing a user-friendly interface and ensuring consistent deployment across environments.

## Breast Cancer Prediction using Machine Learning

- Developed an AI diagnostic tool using the Breast Cancer Wisconsin dataset; implemented multiple classifiers including **KNN, SVC, Decision Trees, Logistic Regression, and an ANN (91% accuracy)** which outperformed others. Applied **GridSearchCV** for tuning and evaluated models using **ROC-AUC, confusion matrices, and classification reports**.
- Built a **Flask** web app for model selection, result visualization, and downloads; integrated **ensemble learning** (Voting Classifier) and streamlined preprocessing with **StandardScaler** and **Label Encoding**.