

RUCHIT DAS

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Summary

AI-focused Computer Engineering student with hands-on experience building production-grade Generative AI and Machine Learning systems. Strong background in Large Language Models, multi-agent orchestration, and retrieval-augmented generation, demonstrated through projects such as a LangGraph-based autonomous agent pipeline, a privacy-first neuro-symbolic RAG assistant, and a large-scale meta-heuristic optimization library. Comfortable taking ideas from experimentation to reliable implementations, with a strong interest in applied AI, system design, and building practical, explainable intelligence.

Education

Ramrao Adik Institute of Technology, D. Y. Patil Deemed to be University

July 2022 – Present

B.Tech in Computer Engineering (Specialization: AIML), CGPA: 7.7/10

Navi Mumbai, India

Projects

Multi-AI Agent System – Autonomous Blog Generator — Python, LangGraph, LangChain, Llama 3.1, FastAPI **Mar 2025 – May 2025**

- Architected a LangGraph-based multi-agent pipeline to automate content research, drafting, review, and publishing.
- Coordinated four role-specialized LLM agents using a self-correcting review cycle guided by 10+ editorial quality checks.
- Integrated asynchronous execution and state monitoring to ensure reliable task flow and fault tolerance.

Local CLaRa Agent – Neuro-Symbolic RAG System — Python, LLMs, ChromaDB, NetworkX, HyDE **Feb 2025 – Apr 2025**

- Created a privacy-first RAG assistant operating fully on local hardware without reliance on external APIs.
- Combined semantic retrieval with graph-based reasoning to handle complex, multi-hop queries.
- Enhanced answer relevance through HyDE-based query expansion and adaptive fallback search.

MHA Flow – Meta-Heuristic Optimization Library — Python, ML, Streamlit, PyPI **Jan 2025 – May 2025**

- Implemented 130+ meta-heuristic optimization techniques targeting non-convex search spaces in ML workflows.
- Introduced an intelligent recommendation module to match problem characteristics with suitable optimizers.
- Exposed a unified API and interactive dashboard to support benchmarking, visualization, and reproducibility.

FarmAI – AI-Driven Precision Agriculture — PyTorch, XGBoost, Reinforcement Learning **Jan 2025 – Mar 2025**

- Constructed a data-driven decision framework for pest risk estimation in precision farming.
- Applied convolutional models for disease recognition and gradient-boosted predictors for outbreak trends.
- Optimized chemical application schedules using reinforcement learning to balance yield and environmental impact.

Technical Skills

- **Languages:** Python
- **Generative AI:** Large Language Models (LLMs), Prompt Engineering, Multi-Agent Systems, RAG (Retrieval-Augmented Generation)
- **ML & AI:** Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision
- **Frameworks & Libraries:** PyTorch, Scikit-Learn, LangChain, LangGraph, FastAPI
- **Data & Retrieval:** ChromaDB, Vector Databases, Knowledge Graphs (NetworkX)
- **Visualization & Deployment:** Streamlit, REST APIs

Certifications

- Oracle Cloud Infrastructure 2025 Certified: AI Foundations
- IBM Certified: Prompt Engineering
- Google Cloud: Introduction to Generative AI
- AWS Academy Graduate: Machine Learning Foundations

Leadership

Bright Minds Preschool

Jan 2025 – Present

Social Media Manager

Remote

- Developed data-driven strategies on Instagram/Facebook, boosting parent engagement by 40% and monthly reach by 15% through content creation and analytics.

Achievements & Extracurricular

e-Yantra Innovation Challenge (eYIC) 2024-25 – IIT Bombay

Nov 2024 – Mar 2025

National Finalist

- Achieved finalist status with "Mitihar - Health Nutrition App" in robotics/innovation competition.

Patent Publication (Filed)

Apr 2023

Co-inventor

- Filed patent for "A System for AI-Enhanced Gesture-Controlled Digital Canvas" in Computer Vision.

Hobbies

Listening music, Gaming (Strategy), Anime