

# RHITIK PRAJAPATI

Ph : 9579447827

Email: rhitikprajapati9279@gmail.com

B.E. Computer Engineering



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## PROFESSIONAL SUMMARY

Detail-oriented and highly motivated Software Engineer with hands-on experience building end-to-end AI systems, including Retrieval-Augmented Generation (RAG), clinical NLP pipelines, and reinforcement learning-based financial models. Skilled in developing full-stack applications using FastAPI, React, Python, and modern ML frameworks. Strong foundation in LLMs, NLP, vector search, embeddings, model evaluation, and RL environments. Demonstrated ability to design production-ready APIs, implement guardrails for AI reliability, and create intuitive UIs for real-time analytics. Passionate about applying AI/ML to solve practical problems with a focus on accuracy, safety, and user experience.

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## EDUCATION

RMD Sinhgad College of Engineering	2021-25
CGPA: 8.2/10	
K.G.B PATIL JUNIOR COLLEGE, Wada	2021
12th   Percentage: 90.83 / 100	
SHUBHAM INTERNATIONAL SCHOOL, Wada, Palghar	2019
10th   Percentage: 80.83 / 100	

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## INTERNSHIP

### PYTHON DJANGO WEBDEVELOPEMENT ELITE SOFTWARES

Technologies: Python, Django, Web Development

Description: Gained hands-on experience in web application development during an internship focused on building and optimizing backend systems using Python and Django. Enhanced backend functionality by designing and implementing robust APIs to support dynamic web features, improving performance through efficient database integration and query optimization. Collaborated on real-world projects to develop scalable solutions, contributing to the deployment of responsive web applications. This internship strengthened skills in web development frameworks, API design, and performance tuning, preparing me to deliver high-quality software solutions in a professional setting.

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## PROJECTS

### 1. Self-Correcting RAG System

Designed and implemented a production-grade Retrieval-Augmented Generation (RAG) system with document ingestion, chunking, and FAISS-based vector search for rapid information retrieval. Integrated multi-layer guardrails—including TF-IDF filtering, LLM-based relevance checks, and no-answer detection—to ensure answer accuracy and safety. Built a self-correcting LLM pipeline that evaluates and regenerates responses to minimize hallucinations and improve grounding. Developed a secure FastAPI backend with JWT authentication, metrics instrumentation, and request tracing. Created a responsive React frontend supporting real-time NDJSON streaming for interactive query visualization.

### 2. MedInsight-LLM

Developed a full-stack clinical AI system, MedInsight-LLM, that performs medical entity extraction, risk stratification, and triage interpretation from free-text clinical notes. Implemented a custom NER model and a multi-class severity classifier using BioClinicalBERT, supported by an evaluation suite with confusion matrix, precision/recall, and uncertainty handling. Integrated LLM-powered summarization (OpenAI GPT models) to generate clinically coherent, safety-aligned interpretations with strong guardrails. Built a production-ready API using FastAPI, complete with PDF report generation, red-flag detection, and triage-level recommendations. Designed an interactive React dashboard enabling real-time case analysis for educational and healthcare triage scenarios.

### 3.Reinforcement Learning–Based Derivative Hedging System

Developed a full-stack quantitative finance application that uses Reinforcement Learning (PPO) to dynamically hedge European options under stochastic market conditions. Designed a custom Gymnasium environment incorporating GBM price dynamics, Black–Scholes Greeks, transaction costs, and discrete trading constraints. Trained and evaluated RL policies against classical delta-hedging and no-hedge baselines, achieving an ~80% reduction in hedging error. Built a FastAPI backend to expose simulation endpoints and a React dashboard for real-time strategy comparison and visualization. Demonstrated strong competencies in RL, quantitative modeling, backend API development, and frontend engineering.

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### SKILLS

- Programming: Python, JavaScript, TypeScript, SQL, Bash
  - Frameworks & Libraries: FastAPI, React, PyTorch, HuggingFace, scikit-learn, Gymnasium, FAISS
  - AI & Machine Learning: LLMs, RAG Pipelines, NLP (NER, summarization), Reinforcement Learning (PPO), Model Evaluation (precision/recall, F1, confusion matrix)
  - Databases & Storage: SQLite, FAISS Vector Store, JSON/NDJSON
  - Tools & DevOps: Git, GitHub, Docker, Postman, JWT Auth, API Design, Metrics & Tracing
  - Frontend: React, Vite, TailwindCSS, REST API Integration
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### CERTIFICATIONS

- Generative AI with AWS-Analytics vidhya
  - JAVA Data Structures and Algorithm - UDEMY
  - •JAVASCRIPT - Infosys Springboard
  - Introduction to Machine Learning - NPTEL
  - •Data Analytics Masters 2025 From Basics to Advanced: UDEMY
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### EXTRA CURRICULAR ACTIVITIES

- ACE Cultural Head
- Sinhgad Techtonic Coordinator
- College Cricket Team Player
- Annual Fest Team Lead

### WEBSITES, PORTFOLIOS, PROFILES

LINKEDIN: <https://www.linkedin.com/in/rhitik-prajapati-502566257>

GITHUB: <https://github.com/RITZ124>