Anuj Patel

+1 682 217-2520 | E-Mail: **anuj.patel.29dec@gmail.com** | GitHub | LinkedIn | Portfolio

Software Engineer (Backend & Applied AI Systems) with hands-on experience building end-to-end AI and backend systems, including LLM-powered automation, OCR pipelines, REST APIs, and scalable data-processing workflows. Experienced in designing production-ready architectures, multi-agent systems, and ML-driven applications, with a strong focus on reliability, performance, and real-world deployment.

EDUCATION

University of Texas at Arlington, Arlington, Texas, U.S | Master's of Science in Computer Science 2025-2027

- **Courses**: Artificial Intelligence, Machine Learning, Cloud Computing, Data Structures

Prestige (PIEMR), RGPV, Indore, MP, India | Bachelor of Technology (Computer Science & Engineering) 2021-2025

WORK EXPERIENCE

University of Texas at Arlington - Research Assistant (Physics-Informed Neural Networks) Feb 2026 - Present

- Developing a Physics-Informed Neural Network (PINN) pipeline to model soil water retention curves using PSD and soil property data.
- Implementing physics-based constraints to ensure physically consistent predictions and improved generalization.
- Building automated evaluation workflows to generate JSON-based metrics, diagnostic visualizations, and reproducible training pipelines.

RinaySoft, Pune, India - Software Developer June 2024 – June 2025

- Developed RESTful backend services to automate data ingestion and processing, supporting **OCR** and **LLM-based extraction pipelines**.
- **Optimized MySQL schemas**, achieving a **~30% reduction in query latency** and improving **data consistency** for **workloads**.
- **Owned end-to-end backend workflows**, including **API design**, **data validation**, and **persistent storage**, ensuring **reliable integration** between **AI services** and **core systems**.

KEY PROJECTS

ANUJ AI/ML LAB | LLMs, RAG, Multi-Agent Systems, Python, CrewAI, Streamlit | IN PROGRESS| CODE

- Built a **modular AI platform** with **LLMs**, **RAG pipelines**, and **multi-agent systems** for **real-world AI workflow evaluation**.
- Implemented **agent-based retrieval** across **documents**, **email**, and **web sources** with **extensible orchestration logic**.
- Designed a **scalable, state-persistent architecture** using **agent coordination protocols (MCP, A2A)** for **production-grade RAG systems**.

INCREMENTAL MODEL | Python, NLP, Sentence Transformers, LLMs, REST APIs, OpenAI, SearchAPIs | CODE

- Developed a **production-grade incremental news intelligence system** supporting **continuous ingestion**, **embedding-based clustering**, and **trend detection** without **full model retraining**.
- Implemented **time-decayed topic modeling** and **LLM-based summarization** for **near real-time insights**.
- Designed **state-persistent**, **deterministic pipelines** exposed via **REST APIs** with an **analytics dashboard**.

CHURNSENSE | Python, SQL, Machine Learning, XGBoost, Behavioral Analytics, Cost-Sensitive Modeling | CODE

- Developed a production-style user retention and churn intelligence system using transaction-level behavioral data, optimized for business impact rather than raw model accuracy.
- Performed SQL-driven exploratory analysis and engineered recency, frequency, and trend-based features to capture early churn signals.
- Implemented cost-sensitive evaluation and risk-based user segmentation to prioritize retention actions and minimize expected revenue loss.

Graph-RAG | FastAPI, Neo4j, LangChain, Docker, LLMs, Graph Traversal Algorithms, Knowledge Graphs | CODE

- Built a **Graph-based Retrieval Augmented Generation (Graph-RAG)** system over arXiv metadata using **Neo4j graph traversal instead of vector search** to deliver more accurate, context-grounded answers.
- Designed a **knowledge graph schema** (papers, authors, topics) and implemented **FastAPI APIs** for graph retrieval, multi-hop reasoning, and LLM-driven response synthesis.
- Containerized the full stack (**FastAPI, Neo4j, Next.js**) with **Docker Compose**, enabling reproducible deployment and health monitoring

TECHNICAL SKILLS

- **Languages:** Python, C++, C
- **AI/ML:** Machine Learning, Deep Learning, NLP, Computer Vision, LLM-based Systems
- **Data & Storage:** MySQL, MongoDB, SQL Optimization
- **Cloud & DevOps:** AWS (EC2, S3, Lambda), Docker, CI/CD (GitHub Actions)
- **Data Science Foundations:** Statistics, hypothesis testing, exploratory data analysis, feature engineering

PUBLICATION & CERTIFICATIONS

NVIDIA Certified Professional: Agentic AI | BADGE January 2026

- Demonstrated applied expertise in agentic AI system design and deployment (NVIDIA Certified).

A Study on the Potential of AI in the Healthcare Sector - Research Paper Feb 2024

- "A Study on the Potential of AI in the Healthcare Sector" metzet 4303 R.pdf