Rahul Yadav

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EXPERIENCE

Hilabs   Feb. 2024 – May 2024
Senior Data Scientist | Applied Data Science Team   Washington, D.C.
GenAI Driven Contract Analyzer: Streamlining Claim Processing
- Led development of a scalable end-to-end system for processing insurance contract documents by implementing entity extraction, which facilitated accurate pricing configuration in claim processing applications
- Engineered custom document processing pipeline with LayoutLM extracting entities with images, tables, and text elements
- Developed Langchain service for indexing extracted elements and managed metadata within OpenSearch to optimize retrieval
- Implemented a robust infrastructure leveraging self-hosted fine-tuned Mistral AI LLM and asynchronous processing via SQS to efficiently handle requests, while prioritizing the utmost security and privacy of sensitive legal contracts
- Successful POCs followed by integration for 3 clients to validate solution effectiveness and potential for widespread adoption

Apexanalytix   May. 2023 – Feb. 2024
Data Scientist | ML Engineer Intern | Analytics Team   Remote, New York
Generative Knowledge Specific Chatbot
- Developed advanced Retrieval Augmented Generation(RAG) Chatbot with LLM for intelligent knowledge access across teams
- Engineered efficient retrieval pipeline with Parent Child document indexing using LangChain and Chroma VectorDB
- Designed agile RAG pipeline, integrating MMR scoring for chunk retrieval and Azure OpenAI LLM for response generation
- Implemented user feedback collection to monitor chatbot performance and gather data for iterative refinement and fine-tuning
- Achieved 89% approval in human evaluations and integrated technology into 12 internal and 18 external client applications

Oracle   Sept. 2020 – Aug. 2022
Senior Application Engineer(ML) | Oracle Financial Machine Learning Team   Bengaluru, India
Preemptive Anomaly Prediction in Corporate Billing
- Implemented in-memory multivariate anomaly prediction system for corporate billing, addressing monthly billing challenges
- Leveraged Oracle in-database ML for Semi-Supervised classification with both local and global model explainability
- Optimized service with indexing and parallelism, processing 1.2M bills and 5M segments in 20 mins with 92% precision
- Integrated services with Oracle Revenue Management and Billing (ORMB) product, **USPTO patent granted** [US17/710745]

Wipro Limited   June 2018 – Sept 2020
Project Engineer(AI) | AI Research Team   Bengaluru, India
Chatbot Services for Employee Helpline Portal's Ticketing System
- Developed Employee Helpline Portal Chatbot with effective retrieval of historical ticket resolutions for enhanced user support
- Implemented query intent classification and BERT-powered semantic search, resulting in precise responses to user queries
- Successfully integrated the chatbot into the portal and achieved the target human agent intervention reduction of 70%
- Achieved 79% accuracy score in evaluation and decreased wait times from 18 to 4 minutes, improving overall user experience

EDUCATION

University at Buffalo, Buffalo   Aug. 2022 – Dec. 2023
Master of Science in Computer Science and Engineering   New York, US

Indian Institute of Technology (Banaras Hindu University), Varanasi   Jul. 2014 – May 2018
Bachelor of Technology in Electronics Engineering   Uttar Pradesh, India

PATENTS and PUBLICATIONS

- **Paper Published:** Virtual Conversation with Real-Time Prediction of Body Moments/Gestures – **ICMLIP 2019** [Link]
- **US Patent Granted:** Method And System For Multimodal Analysis Based Emotion Recognition – **US16/795840** [Link]
- **US Patent Granted:** Anomaly Detection for Bill Generation – **US17/710745** [Link]
- **US Patent Granted:** Technology System For Assisting Financial Institutions In Debt Collection – **US17/659017** [Link]

SKILLS

Languages : Python, Java, C++, C, PLSQL, SQL, MongoDB

Technologies : Retrieval Augmented Generation(RAG), Large Language Models(LLMs), Natural Language Processing(NLP), Machine Learning, Deep Learning, Web Services, Data Structures, Algorithms, Prompt Engineering, Indexing, Quantization

Cloud : Amazon Web Services (AWS), Azure, Google Cloud Platform (GCP), Oracle, Atlas, OpenAI

Frameworks and Libraries : Pytorch, Tensorflow, MLFlow, Kafka, SentenceTransformers(embeddings, re-rankers), Databricks, Snowflake, PySpark, Langchain, LlamaIndex, VectorDBs(ChromaDB, Faiss, elasticsearch), MLFlow, Git, Jenkins, Big Data, Hadoop, Flask, Docker, Kubernetes, Pandas, Streamlit, Flask-RESTful, FastAPI, YOLO, Django, XGBoost, GAN, ActiveMQ, Springboot