Manabendra Rout

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SKILLS

PROGRAMMING
Python 3 • R

MACHINE LEARNING
Generative AI • LLM Fine-Tuning
NLP • CV • Transformer Models
Prompt Engineering • Clustering
Deep Learning • RAG Systems

CLOUD
GCP • AWS • Oracle

MODEL DEPLOYMENT
TorchServe • Ray • Docker
Nginx • Distributed Inference

DATA STREAMING
Pulsar • Kafka

LIBRARIES/TOOLS
PyTorch • Hugging Face • TensorFlow
LangChain • OpenCV • Scikit-learn
OpenAI APIs • vLLM • Spacy

VECTOR DATABASES
Weaviate • Qdrant • Chroma

DATA MANAGEMENT
MongoDB • MySQL

API FRAMEWORKS
FastAPI • Flask • Django

PROTOTYPING
Gradio • Dash • Shiny

LINKS

Portfolio:// **mrout94.github.io**
Github:// **mrout94**
LinkedIn:// **manabendrarout**

EDUCATION

NIT ROURKELA
B. Tech in Mechanical
Engineering
Grad. May 2016 | Odisha, India
Cum. GPA: 8.08 / 10

EXPERIENCE

SIRION | Senior Applied AI Engineer
Feb 2022 – Present | Bengaluru, India

- Built a **Generative AI-based search platform** integrating OpenAI GPT models and open-source LLMs to enable seamless interaction with legal document corpora.
- Designed and deployed a **Auto Redlining Application** using GPT-4o for automating contract modification/negotiations in alignment with organizational guidelines.
- Created a **RAG-based chatbot** utilizing open-source LLMs to support advanced contract Q&A.
- Fine-tuned multiple open-source LLMs (e.g., Llama3, Llama2, Qwen, MPT) for legal domain tasks such as instruction-following and conversational Q&A using **distributed training methods** (FSDP, DDP).
- Implemented latency optimizations for locally hosted LLM inference, achieving **significant reductions** in response times.
- Fine-tuned multiple **text embedding models using contrastive learning techniques** and designed **novel data generation approaches** for domain-specific embeddings, improving downstream task performance..
- Enhanced clause detection accuracy from 76% to 93% through a **Transformer based classification model** and a novel loss function.
- Innovated a scoring mechanism for clause deviation analysis using **Siamese networks and Transformer models**.
- Trained a Seq2Seq model for generating agreement titles from document excerpts.
- Act as a senior team member by **mentoring junior engineers**, conducting **knowledge transfer (KT) sessions**, leading **design discussions**, and performing **comprehensive code reviews** to maintain technical excellence and foster team growth.

UNITEDHEALTH GROUP (OPTUMRX) | Assc. Data Scientist
Sep 2020 – Feb 2022 | Noida, India

- Delivered a **predictive modeling system** achieving an F1 score of 0.82 for forecasting order outcomes.
- Contributed to process optimization via a **Process Mining dashboard** that identified inefficiencies and predicted deviations in workflows.
- Applied NLP techniques for **topic modeling** of customer feedback, enabling actionable insights to reduce cancellations.

BAJAJ AUTO LTD. | Assistant Manager, R&D Division
Jul 2016 – Sep 2020 | Pune, India

- Developed a GBM-based model to predict bearing friction loss, reducing analysis time by 12%.
- Designed a web-based framework for automating test data handling, achieving **90% time savings**.
- Applied ML techniques to address material strength predictions and dynamic component behavior.