AMAN KUMAR

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Professional Summary

Machine Learning Engineer passionate about exploring the intersection of data and technology. Experienced in designing adaptive AI pipelines, deploying LLM-based systems, and building scalable MLOps solutions.

Education

Vellore Institute Of Technology, Vellore **Sep 2020 – Jul 2025**
MTech Integrated Data Science *CGPA: 8.1*
Army Public School **2020**
CBSE XII *93.8%*

Experience

Sandisk India **Sept 2025 – Present**
Machine Learning Engineer *In Office*
- Enhanced multi-corner timing predictions for the SWIFTECO framework: MAE 8 ps (0.008), 20% over-estimation, under-estimation 0.005 units.
- Reduced timing analysis turnaround from over a day to 47min, accelerating ECO validation cycles and throughput.
- Processed large PrimeTime reports (10+ GB/rpt) with scalable pipelines for parsing, feature extraction, and automated validation.
- Designed Stream IP and RTL Lint Agents enabling natural language queries and automated RTL cleanup, reducing manual intervention.

Hyperbots **June 2025 – Sept 2025**
Applied ML Engineer *In Office*
- Productionized MLOps pipelines across AWS/GCP with Docker & Jenkins, ensuring reliable deployment of ML and LLM-based agent systems.
- Built intelligent document processing pipeline (Gradio + OCR + HIL) for RAG-style retrieval and annotation workflows, reducing manual validation.
- Implemented Slack-integrated ML feedback loop improving invoice conflict detection and enabling real-time adaptive predictions.
- Developed real-time monitoring dashboards in React for pipeline health, model performance, and workflow accountability.

Western Digital (Sandisk India) **Sep 2024 – June 2025**
AI-ML Intern *In Office*
- 55% improvement in STA timing consistency using optimization-driven ML models, reducing design iteration cycles.
- **Automated IR drop and PT report analysis** in Python, strengthening verification reliability.

Projects

Adaptive Macro Regime Detection & ETF Rotation — *Python, hmmlearn, FRED API, Walk-Forward HMM*
- Built a 3-state Gaussian HMM trained on 12 FRED macro series (yield curve, credit spreads, CPI, unemployment) to detect Expansion / Stagnation / Contraction regimes and dynamically rotate a 6-asset ETF portfolio (SPY/TLT/GLD/LQD/HYG/BIL).
- 241-month walk-forward OOS backtest (2006–2026, zero look-ahead bias): Sharpe 0.937 vs SPY 0.760; Max Drawdown –21% vs SPY –50.8%; +3.4% during 2008 GFC while SPY fell 46%.

TALK to DB (Natural Language DB Interface) — *Streamlit,RAG, MMR, LangChain, SQL*
- Enabled natural-language querying over relational databases for non-technical users using LLM + LangChain pipelines.
- Improved query reliability via schema-aware prompting, validation checks, and adaptive feedback loops.

Technical Skills

Languages: Python, SQL, Java, Tcl
Web & APIs: FastAPI, React.js, Flask, Docker, Kubernetes, Jenkins, Webhooks, GitHub Actions
ML/AI Frameworks: TensorFlow, Keras, scikit-learn, Hugging Face Transformers, LangChain
Generative/Adaptive AI: LLMs, RAG, NLP, VectorDB (ChromaDB, Pinecone)
Data Analysis: Pandas, NumPy, Matplotlib, A/B Testing, EDA
Tools & Cloud: Git, Linux, PostgreSQL, AWS, GCP, Power BI, Jupyter

Certifications

Artificial Intelligence Analyst (IBM)
Introduction to Generative AI (Google)