Rohit Sharma

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Education

University of Pennsylvania   Aug 2025 – May 2027 (expected)
M.S. in Computer and Information Science   *Philadelphia, PA*
Manipal University Jaipur   Jul 2020 – May 2024
B.Tech in Computer Engineering (GPA: 3.94/4), Valedictorian (1/240)   *Jaipur, Rajasthan, India*

Experience

Research Assistant — The Wharton School, University of Pennsylvania   Aug 2025 – Present
Real Estate Department   *Philadelphia, PA*
- Engineered **Index of Local Zoning** on **AWS**/**PostGIS**, unifying **1,200+** sources (**12 TB**) and cut preprocessing **65%**.
- Built an LLM pipeline (LangChain + OpenAI) for zoning PDFs; topology/CRS checks improved accuracy by **40%**.

Founding Machine Learning Engineer | **Krishikalyan – The Farmer's Friend**   Jul 2024 – Jul 2025
AI-Powered Precision Agriculture Startup   *Jaipur, India*
- Launched drone disease detection, mapping **1,800+** acres (**90+** flights/month) and generating geo-referenced prescription maps for targeted spraying.
- Implemented the smart sprayer's on-device vision pipeline (camera $\rightarrow$ CNN $\rightarrow$ thresholded actuation) on an NVIDIA Jetson module, optimized for real-time auto-spray under tight compute and power constraints.
- Delivered **INR 5M** (**$60K**) in paid pilots and field impact **(chemicals -40%, labor -50%, yield +15%)** while sustaining **120 ms** p95 and **99.9%** SLO over 90 days.
- Built an edge-to-cloud pipeline to ingest and preprocess imagery from **90+** drone flights/month, maintain labeled datasets, and retrain disease-detection models on new field data.

Machine Learning Engineer — Manipal University Jaipur   Jun 2024 – Jul 2025
Data Science and AI Research   *Jaipur, India*
- Engineered **MUJGPT**, an LLM platform serving ~**25K** queries/month with **220 ms** latency and **99.5%** uptime.
- Cut p95 latency by **180 ms** and token usage by **30%** using RAG + CoT, Redis caching, and parallel API calls.
- Implemented PII and toxicity guardrails with role-based access control and audit logs, adopted by **2,100+** students.
- Built latency/error/safety dashboards and ran A/B tests on prompts/models to test hypotheses, improving UX.

Machine Learning Engineer Intern — Indian Space Research Organization (ISRO)   Aug 2023 – May 2024
Signal & Image Processing Department   *Ahmedabad, India*
- Led an **11**-member team to operationalize lunar crater detection (**YOLOv9**+ **ViT**) for India's lunar mission (Chandrayaan), **94%** on **540k** images, **180** images/s, analyst review **-25%**.
- Optimized Cartosat captioning with **TorchScript** and batching, **3.2x** throughput and **+4%** accuracy, reaching ~**91%**.
- Built a custom 5m **ResourceSat-2 LISS-IV** road dataset and benchmarked ResUNet against SOTA CNNs, reaching **97.76%** accuracy and establishing the first CNN-based road extraction pipeline.
- Shipped 3D geospatial tools in **Java** using **Hexagon Luciad** with tile caching, adopted in **3** national projects.

Technical Skills

Languages & ML: Python, C++, Java, SQL, PyTorch, TensorFlow, scikit-learn, XGBoost, Hugging Face Transformers
LLMs & Retrieval: OpenAI API, LangChain, RAG, Chain-of-Thought prompting, PEFT/LoRA, vLLM, FAISS, pgvector
MLOps & Distributed Systems: Docker, Kubernetes, GitHub Actions, Jenkins, FastAPI, gRPC, MLflow, TorchServe, Triton, TensorRT, ONNX Runtime, Ray, Apache Spark, Apache Kafka, Prometheus, Grafana, unit & integration testing (PyTest)
Data & Cloud: PostgreSQL, PostGIS, Redis, MySQL, AWS (EC2, S3, SageMaker), Azure ML

Publications & Patents

10+ peer reviewed papers (IEEE, Springer), Best Paper Awards, **2** patents granted, **11** published applications. Full list Google Scholar.

- *A Novel Deep Learning Approach for Data Analysis on High Resolution Chandrayaan-2 Data*, IEEE SPACE (Aerospace & Defense Conference), 2024 **(Best Paper Award)**
- *SAR Images Change Detection Using Lamina Attention-Based Noise-Resistant UNet (LANRUNet++)*, Digital Signal Processing (DSP), 2023 **(Q1)**
- *Empowering Image Captioning on Indian Remote Sensing Imagery Using Deep Learning*, J. Indian Soc. Remote Sens. **(Q1)**
- **Patent** Dual Compartment Spraying Device with Inbuilt Crop Disease Severity Detection, **IND 552914**, 2023