Mrinal Goel

+1 (919) 408 6838| Email | LinkedIn | GitHub | Portfolio

Education

Duke University Durham, NC
Master of Engineering in Artificial Intelligence, ***Present*** *2025 - 2027*

- AI Student Consultant @ BMW Group
- Co-Chair @ Duke Women in Science and Engineering (WiSE)
- Relevant Coursework: Reinforcement Learning, Explainable AI, Deep Learning, LLMs, Algorithms

PES University Bangalore, India
Bachelor of Technology in Biotechnology, CGPA - 9.14/10.0 *2018 - 2022*

Technical Skills

Programming: Python, SQL
Backend Frameworks: Django, Flask, FastAPI
Database: PostgreSQL, MongoDB, ChromaDB, Milvus, Neo4j
Gen AI Techniques/Tools: MCP, Fine-tuning, RAG, Multi Agent frameworks (LangGraph, Crew), LangChain
Explainability Tools: GradCAM, SHAP, LIME, PGD Attacks
DS and ML: Scikit-learn, TensorFlow, MLFlow, HuggingFace, Pandas, NumPy, PyTorch
Cloud and Infra: AWS, Azure, Docker, Kubernetes

Work Experience

AIqwip Bangalore, India
Generative AI Engineer *March. 2024 - July. 2025*

- Reduced the top-20-chunk retrieval failure rate by 62% in a **RAG** pipeline by implementing **contextual embeddings**, **BM25 rank fusion**, and **Cohere-based reranking**.
- Built a **multi-agent** support system with **LangGraph** orchestrating question refinement, **function calling** and **human-in-the-loop feedback agents**, enabling accurate context-aware multi-turn customer conversations.
- Developed an OCR microservice for a fleet management company achieving **91.7%** accuracy in extracting entities from invoices and POs. Used AWS triggers, SQS and **AWS Lambda** to maintain a serverless architecture.

Strand Life Sciences Bangalore, India
Associate Bioinformatics Engineer *Oct. 2022 – Aug. 2023*

- Engineered features and performed a supervised learning task on highly imbalanced Genomic data to aid the identification of at-risk individuals.
- Analyzed Genomic data from Next Generation Sequencing (NGS) using statistical tests in R and Python.

Project work

- **Racing using Reinforcement Learning** : DQN agents trained in a custom racing environment to master driving through iterative learning. | *DQN, PyGame*
- **Mechanistic Interpretability Study** : Analyzed internal representations of transformer models to understand feature formation and circuit behavior, extracting interpretable concepts from neural network activations. | *PyTorch, TransformerLens, Sparse Autoencoders*
- **Targeted Adversarial Attack** : Adversarial attack system demonstrating AI vulnerabilities by generating targeted imperceptible perturbations to fool AI models using gradient-based methods. | *PyTorch, GradCAM, PGD Attacks, Adversarial ML*

Certifications and Courses

- Microsoft Certified: Azure AI Engineer Associate
- SQL for Database Management