

Pranav Mishra

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Education

Master of Science, Computer Science [Graduate Assistant]

University of Illinois at Chicago, Illinois, USA

Aug 2023 - May 2025

GPA: 3.6/4.0

Bachelor of Science, Computer Science and Engineering

Dayananda Sagar College of Engineering, Bangalore, Karnataka, India

Aug 2019 - June 2023

GPA: 4.0/4.0

Technical Experience

AI/ML Intern | WheelPrice | Charlotte, NC

July 2025 - Nov 2025

- Built end-to-end ML prototype for automotive part fitment prediction using PyTorch and computer vision models, deployed on AWS EC2 with automated scaling and monitoring, improving user engagement by 40%.
- Built distributed training orchestration system using Java Spring Boot with AWS infrastructure (ECS, SQS, DynamoDB).

Research Software Engineer | UIC: V-ARE Labs | Chicago, IL

Feb 2024 - July 2025

- Built virtual patient system and deployed TypeScript REST APIs integrated with PostgreSQL for data analysis. ↗
- Integrated LangChain and PostgreSQL to build a full-stack virtual avatar platform on Azure, enabling users to create custom RAG systems with one-click deployment using a React frontend and Cosmos DB vector database ↗

Research & Publications

TeamMedAgents: Enhancing Medical Decision-Making of LLMs Through Teamwork

GitHub | DOI/arXiv

- Developed dynamic multi-agent framework with Google ADK & Langchain translating organizational teamwork principles into LLM-based medical reasoning systems with dynamic agent communication algorithms, and Azure cloud deployment.
- Achieved superior performance across 7/8 medical datasets, now extending research to SLM agents. [AAAI 26 submission]

Projects

MetaRAG: Enhancing Document Retrieval with LLM-Driven Metadata Enrichment

GitHub

- Architected end-to-end metadata enrichment framework for RAG systems using LangChain & Pinecone database.
- Implemented Kafka streaming pipeline for real-time document ingestion and processing, handling 10k+ documents/hour. Delivered 92.5% precision and 25% hallucination reduction through hybrid search algorithms & custom retrievers.

SnakeAI-MLOps: Multi-Agent Reinforcement Learning Snake Game

GitHub | Demo

- Built C++ game with SFML and LibTorch, implementing MLOps pipeline with 4 RL algorithms, model comparison tools, and CI/CD deployment with Docker containerization achieving 5x training speedup through CUDA optimization.

Automating Prompt Generation for Training-Free Object Segmentation in PaintSeg

GitHub

- Developed autoprompting system leveraging computer vision techniques with diffusion models and Dense Prediction Transformer fine-tuning, PostgreSQL database for automated data annotation.
- Achieved 5.5% intervention in IOU score, deploying MLOps pipeline with Kubernetes orchestration.

Reproduced InBedder Text Embedding: Answer is All You Need

GitHub

- Reproduced ACL research implementing Inbedder text embedders using TensorFlow and PyTorch for NLP applications.
- Evaluated performance across 7 benchmark datasets ETL pipelines using Node.js backend and MongoDB database.

Skills

TECHNICAL SKILLS: Python, Java, C++, JavaScript, C#, TensorFlow, PyTorch, MatLab, Pandas, LangChain, React, NumPy, Node.js, Flask, Next.js, Django, FastAPI, PostgreSQL, SpringBoot, Docker, Kafka, Git, GCP, Azure, AWS, DevOps, REST APIs

APPLICATIONS: Machine Learning, Deep Learning, NLP, Computer Vision, Neural Networks, Transformers, Data Science, MLOps, Cloud Computing, Agile Development, Linux, Fine tuning, Data structures, Mathematics, Version Control

Extracurricular

Winner of MIT XR Hackathon | Built Meta Quest 3 app using Unity and Hugging Face for spatial data visualization ↗

INFORMS Analytics+ Presented MetaRAG research to 700+ professionals | First place HINT 5.0 Web3 virtual museum ↗

Curated portfolio of 25+ innovative projects spanning game design, AI/ML research, and in-development work. ↗