

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

- Building end-to-end ML prototype for automotive part fitment prediction using PyTorch and computer vision models.
- Deployed production-grade CMS blog system using React TypeScript with Node.js backend, MongoDB database, and RESTful APIs, scaling daily webapp viewership by 10-20k through enhanced content delivery and SEO implementation.

Research Software Engineer | *UIC- VARE Lab* ↗ | Chicago, IL

Feb 2024 - Jan 2026*

- Built virtual patient system using Unreal Engine and C++. Deployed REST APIs with Python backend for data analysis ↗
- Deployed end-to-end audio ML pipeline with Flask backend comparing MFCC feature engineering, CNN architectures, and Transformer models achieving 98.52% accuracy; deployed real-time inference system with VAD & robustness testing. ↗

Research & Publications

TeamMedAgents: Medical Decision Making with SLMs through Teamwork

GitHub | DOI/arXiv | v2.0

- Engineered modular multi-agent system using Google ADK with prompt engineering for medical QA across 8 benchmarks.
- Achieved 77.63% accuracy on LLMs and 3.1x inference speedup on 4B models through collaborative deliberation, trust-weighted voting, and structured multi-turn reasoning with comprehensive evaluation frameworks.

MetaRAG: A Systematic Framework for Enterprise Knowledge Retrieval:

GitHub | DOI/arXiv

- Architected end-to-end metadata enrichment pipeline for RAG systems using LangChain, vector databases with Pinecone.
- Engineered hybrid retrieval system with reranking and cross-encoder models, achieving 92.5% precision and 25% hallucination reduction; deployed on Azure with automated CI/CD pipelines and comprehensive evaluation metrics.

Projects

SnakeAI-MLOps: Multi-Agent Reinforcement Learning Snake Game

GitHub | Demo

- Engineered RL training framework in C++ with LibTorch, PyTorch integration, and CUDA GPU acceleration.
- Built production MLOps pipeline with model comparison tools, Docker CI/CD, and real-time gameplay integration.

MedRAG Avatar Platform - Intelligent Healthcare Conversational AI System

GitHub | Demo

- Architected and deployed a production RAG system using Azure OpenAI, Cosmos DB vector search, and Pinecone for semantic document retrieval, enabling context-aware conversational avatars with 95% knowledge accuracy.
- Built FastAPI backend with ETL pipelines supporting source attribution and inline citations for avatar responses

Automating Prompt Generation for Training-Free Object Segmentation in PaintSeg

GitHub

- Built autoprompting system with Stable Diffusion and Dense Prediction Transformer for zero-shot segmentation.
- Optimized multi-GPU training pipeline with PostgreSQL, achieving 3.2x speedup through batch processing.

Skills

TECHNICAL SKILLS: Python, C++, JavaScript, C#, TensorFlow, PyTorch, MatLab, Pandas, LangChain, React, NumPy, Node.js, Flask, Next.js, Django, FastAPI, PostgreSQL, MongoDB, Docker, 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 ↗

Explore my portfolio for 25+ innovative projects spanning game design, AI/ML research, and in-development work ↗