Pranav Mishra

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Education

Master of Science, Computer Science [Graduate Assistant] *Aug 2023 - May 2025*
University of Illinois at Chicago, Illinois, USA GPA: 3.6/4.0

Bachelor of Science, Computer Science and Engineering *Aug 2019 - June 2023*
Dayananda Sagar College of Engineering, Bangalore, Karnataka, India 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: V-ARE Labs | Chicago, IL *Feb 2024 - July 2025*

- Built virtual patient system using Unreal Engine and C++. Deployed REST APIs with Python backend for data analysis ↗
- Integrated LangChain & PostgreSQL to build a full-stack virtual avatar platform on Azure cloud services, enabling users to create custom RAG systems with one-click deployment using React/JavaScript frontend and Cosmos DB vector database. ↗

Research & Publications

TeamMedAgents: Enhancing Medical Decision-Making of LLMs Through Teamwork *GitHub| DOI/arXiv*

- Developed systematic multi-agent collaboration framework in Python translating organizational teamwork principles into LLM-based medical reasoning systems with dynamic agent recruitment algorithms, and Azure cloud deployment.
- Achieved superior performance across 7/8 medical datasets through systematic ablation studies. [AAAI 26 submission]

Projects

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.

Stellarium: A Space Odyssey - VR Star System *GitHub | Demo*

- Architected immersive VR educational platform in Unity/CAVE3D system using C# and GLSL shaders, integrating 107k+ star astronomical datasets with Python preprocessing pipelines and real-time constellation mapping algorithms.
- Developed dynamic time simulation features, achieving 50% performance optimization through GPU instancing and LOD.

MetaRAG: Enhancing Document Retrieval with LLM-Driven Metadata Enrichment *GitHub*

- Architected end-to-end metadata enrichment framework for RAG systems using LangChain & Pinecone database.
- Delivered 92.5% precision and 25% hallucination reduction through hybrid search algorithms & custom retrievers, deploying scalable Linux infrastructure with CI/CD pipeline on Azure cloud Services.

AgentMafia: Multi-Agent Deduction Game *GitHub*

- Implemented intelligent gameplay programming through LangChain AI agents with TypeScript/JavaScript optimization, featuring responsive HTML/CSS interface design and scalable API architecture for multi-user interactions.

Skills

TECHNICAL SKILLS: C#, C++, Unity, Unreal Engine, GLSL, OpenGL, Vulkan, Python, JavaScript, React, Node.js, PostgreSQL, MongoDB, Git, Docker, .NET Framework, Flask, Rust, Django, FastAPI, DevOps, Azure, AWS

APPLICATIONS: Game Development, Virtual Reality, Computer Vision, Machine Learning, Object-Oriented Programming, Cross-Platform Development, Performance Optimization, Agile Development, Version Control, Linux

Extracurricular

Winner of MIT XR Hackathon | Built Meta Quest 3 app using Unity and Hugging Face for XR planning and design ↗

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 ↗