Ankur Desai

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Education

Michigan State University Expected, May 2028
B.S. in Computer Science *East Lansing, MI*

- GPA: 3.74 / 4.0
- Involvement: Vice President of Claude Builder Club @ MSU, Eagle Scout
- Relevant Coursework: Linear Algebra, Discrete Mathematics, Object-Oriented Software Design, Computer Organization and Architecture, Data Structures & Algorithms

Experience

MSU Unmanned Systems — SUAS Competition Feb. 2025 – Present
Software Engineer — Autonomous Systems *East Lansing, MI*

- Engineered autonomous drone payload delivery system on Nvidia Jetson, integrating MAVLink and Orange+ flight controller, capable of releasing packages from 80+ feet altitude with a precision of ±3 feet.
- Built machine learning pipeline: cleaned and labeled 5K aerial images, trained and tuned YOLOv11 model, and validated real-time inference on embedded CUDA hardware with TensorRT through regression tests.
- Benchmarked Python inference against a refactored C++ implementation, achieving a 36% improvement in detection latency on embedded platforms.

ThinkStack — Relationship Powered Note Taking Tool Aug. 2025 – Nov. 2025
Software Engineer *East Lansing, MI*

- Led team of 4 developers as project lead, developing a note-taking app using a chapter-and-page model, letting users compose concepts, layer Markdown segments, and visually connect ideas with annotated links.
- Orchestrated agile sprints and CI/CD workflows, and expanded PyTest and Jest testing suites to achieve 94% code coverage through unit and integration tests.
- Implemented a dual-database architecture integrating PostgreSQL and Neo4j, increasing query speeds by 48% and reducing database load by 30%.
- Built a modular React web app with Vite and Tailwind CSS for rapid and responsive styling, component-based architecture, efficient batching algorithms using the marked library, and OAuth2 authentication.

Projects

Mira — AI Personal Assistant | *FastAPI, PostgreSQL, Next.js* May 2025 – Present

- Engineered an AI assistant that continuously fuses audio from multiple devices, detects actionable intent, builds LLM prompts with context and integrates with user tools to asynchronously complete tasks.
- Implemented RAG pipelines incorporating sentiment analysis and Named Entity Recognition (NER) to determine intent and disambiguate user commands by augmenting Gemini API prompt with context.
- Improved Whisper model accuracy from 91% to 98% through spectral gating, denoising, and gain control.
- Deployed containerized FastAPI backend on AWS EC2 instance with AWS RDS integration, optimized with lazy loading, and dependency injection.
- Designed Electron and Next.js desktop client, integrating WebSockets and RTC-based Voice Activity Detection (VAD) for low-latency audio processing of user surroundings and commands.

WizViz — Multiplayer AR Wizard Game | *MediaPipe, OpenCV, PyGame* Feb. 2025

- Developed real-time multiplayer AR wizard-duel game using OpenCV and PyGame, winning the Interactive Media track among 100+ projects and 350+ participants at SpartaHack X.
- Built a custom physics game engine with collision detection for gesture-based controls and interactions.
- Used MediaPipe Pose for skeletal tracking of 2 players on 33 landmarks with sub-20ms at 60 FPS.

Technical skills

Languages ..... Python, Java, C/C++, JavaScript/TypeScript, HTML5, CSS3
Frameworks ..... React, Next.js, Vite, Node.js, Electron, FastAPI, SQLAlchemy, Tailwind
Libraries ..... TensorFlow, PyTorch, OpenCV, MediaPipe, YOLO, Sentence Transformers
Databases ..... PostgreSQL, Neo4jÍ, AWS RDS
Cloud & DevOps ..... Docker, Git, CI/CD, AWS (EC2, ECS, CloudWatch), Google Cloud Platform