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: VP of Claude Builder Club, Eagle Scout
- Relevant Coursework: Linear Algebra, Discrete Mathematics, Object-Oriented Software Design, Computer Organization and Architecture, Data Structures & Algorithms

EXPERIENCE

Michigan State Unmanned Systems Nov. 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 70+ feet altitude with a precision of ± 7 feet.
- Constructed machine learning pipeline: curated a 5,000+ aerial image dataset and optimized YOLO inference using TensorRT on embedded CUDA hardware at 30 FPS.
- Researched and implemented advanced path-planning; compared A* and Dijkstra's algorithms, developing a custom A* based solution for efficient multi-waypoint autonomous navigation.

ThinkStack — Relationship Powered Note Taking Application Sept. 2025 – Nov. 2025
Project Lead *East Lansing, MI*
- Developed a note-taking app using a chapter-and-page model, letting users organize projects, compose layered Markdown, and visually connect ideas with Neo4j-powered links.
- 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.
- Designed and implemented containerized RESTful API with secure JWT-based authentication and CORS middleware, integrating PostgreSQL and Neo4j in a cohesive dual-database architecture.
- Led agile SCRUM team of 6 software developers, coordinating sprints and communicating goals with client.
- Streamlined collaboration with CI/CD pipelines, boosting unit test code coverage to 87%.

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.
- Deployed containerized FastAPI backend on AWS Lambda and AWS RDS, optimized with CORS middleware, asynchronous processing, lazy loading, and dependency injection.
- Increased Whisper model accuracy by 63% through spectral gating, denoising, and dynamic gain control.
- 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.
- 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-30ms at 60 FPS.

TECHNICAL SKILLS

Languages . . . . Python, Java, C/C++, JavaScript/TypeScript, HTML5, CSS3, SQL, Bash
Frameworks . . . . React, Next.js, Vite, Node.js, Electron, FastAPI, SQLAlchemy, Tailwind
Libraries . . . . TensorFlow, PyTorch, OpenCV, MediaPipe, YOLO, Sentence Transformers
Databases . . . . PostgreSQL, Neo4j, AWS RDS
Cloud & DevOps . . . . Docker, Git, CI/CD, AWS (Lambda, EC2, ECS), Google Cloud Platform