

# Ankur Desai

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## EDUCATION

### Michigan State University

B.S. in Computer Science

Expected, May 2028

*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  $\pm 7$  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 engineers, 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