Michael Ku Jr

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Education

Olin College of Engineering, Needham, Massachusetts | May 2028

Bachelor of Science in Electrical and Computer Engineering

Relevant coursework: Machine Learning, Data Structures & Algorithms, Discrete Math, Image Processing, Software Systems

Skills & Abilities

Languages: TypeScript, Python, JavaScript, C/C++, MATLAB, SQL

Web / Full-Stack: Angular, React, Next.js, Node, Tailwind, FastAPI, Directus, REST/OpenAPI (Swagger)

AI / ML: PyTorch, LangChain, LangGraph, RAG, fine-tuning (LoRA), Qdrant/Chroma, OpenAI, OpenCV

Infra / Tools: Git, Docker, Rancher, Vercel, Supabase, Postgres, MCP, KiCad

Experience

Full-Stack Intern | Liberty Mutual, Global Risk Solutions | May 2026 – Present

- Developing a new cyber-risk platform end-to-end (backend, API, UI) to replace legacy systems and give commercial teams faster, self-serve implementation.
- Built the service and API layer on a Directus backend, defining OpenAPI/Swagger contracts to standardize data flow between database and application.
- Engineered the web application UI in Angular and TypeScript, turning platform requirements into production components.
- Introduced MCP-based tooling and modernized legacy web packages, building automated feedback loops that accelerated team delivery.

Software Engineering Intern | InnovationForce | May 2025 – August 2025

- Built and deployed Retrieval-Augmented Generation (RAG) agents that improved user self-service adoption and efficiency.
- Designed web crawlers with Crawl4AI to automate market research and reduce analyst costs.
- Automated research workflows and streamlined queries, saving employees 100+ hours and improving data accuracy.
- Developed a React-based GUI that simplified database scraping for nontechnical users and improved client onboarding.

Co-Founder & CTO | Limitless | 2025 – Present

- Architecting and building a full-scale platform end-to-end (Next.js, TypeScript, Tailwind, Supabase, Vercel), owning architecture, infrastructure, and deployment through to launch.
- Established the entire engineering foundation from zero: environment structure, data model, and CI/CD pipeline.
- Developed proprietary AI models to interpret and evaluate idea quality, powering the platform's core discovery engine.

President & Founder | Ascend Leadership, Olin Chapter | 2023 – Present

- Founded and lead Olin's first Pan-Asian leadership chapter and won the $10,000 Ascend Legacy Scholarship.
- Created consulting opportunities that placed members in internships at partner companies, alongside workshops and mentorship.

Projects

Universal Document Intelligence Platform | 2026

- Built a configurable RAG and reasoning system spanning finance, legal, and healthcare, benchmarked against vanilla LLM baselines with a rigorous eval framework.
- Engineered a hybrid retrieval pipeline (dense embeddings + BM25) with Cohere cross-encoder reranking, raising retrieval accuracy to 92% (+22 pts over baseline) across 120 eval questions.
- Shipped end-to-end on Python, Claude Sonnet, OpenAI embeddings, Qdrant, FastAPI, and Streamlit with LangSmith observability.

Personal Learning Agent (Obsidian + Discord) | 2026

- Built a multi-agent RAG system that ingests AI/ML content (YouTube transcripts first), organizes it into a hybrid concept-and-tool knowledge base, and surfaces adaptive answers with video timestamps and watch-tracking so material is never repeated.
- Architected the pipeline in LangChain then refactored to LangGraph to benchmark the tradeoffs, integrating Claude via Claude Code, a Chroma vector store, and an Obsidian vault writer.

Scribblz, Wall-Drawing Robot | 2025

- Led electrical design for an autonomous robot that suctions to vertical glass and draws user-input images: designed a custom PCB, power system, and sensor integration (6-axis IMU, LiDAR, brushless ESC).
- Built a custom brushless-impeller vacuum system and omni-wheel kiwi drivetrain on an Arduino Nano ESP32, with LiDAR-based localization and wireless teleop to a Raspberry Pi docking station.