

Fernando Lopez

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Education

University of Illinois Chicago (UIC)

Bachelor of Science in Computer Science

Relevant Coursework Data Structures, Programming Practicum, Mathematical Foundations of Computing, Machine Organization, Languages and Automata, Programming Language Design and Implementation

Aug 2023 - Dec 2026

Technical Skills

Programming Languages: Python, C++, Java, Go, SQL, JavaScript

Frameworks: LangChain, React, Django, Flutter, Pytest, JUnit5

Deployment Tools & API's: Vercel, Render, Sanity, Brevo, EmailJS

Development Tools: Docker, Git, Linux, Vim, Firebase, PostgreSQL, SQLite, Figma, Maven, VS Code, Arduino IDE

AI Models: WatsonX

Relevant Experience

Dulce Tentaciones - Freelance Software Engineer

Jun 2025 - Aug 2025

- Directed the full SDLC for a local startup, delivering a responsive React application from requirements to deployment
- Engineered a scalable marketing pipeline using Brevo and EmailJS, capable of processing 1,000+ monthly customer orders without manual intervention
- Integrated Sanity CMS to enable non-technical content updates, reducing developer maintenance time by 100%

Projects

Digital Art Watermark Page (Python, Django, React, PostgreSQL, Figma, Javascript, Render, Vercel)

Aug 2025 - Dec 2025

- Engineered a secure, decoupled, full-stack permission system utilizing advanced data structures for digital rights verification
- Implemented a Merkle Tree architecture to ensure tamper-proof data integrity and permission verification
- Integrated Bloom Filters and Skip Lists to optimize performance, achieving O(1) existence checks and O(log n) search speeds
- Designed the PostgreSQL schema and deployed the modularized architecture using Vercel (Frontend) and Render (Backend)

RAG PDF Assistant - Michigan DevFest (6-Hour Hackathon) (Django, React, Docker, WatsonX)

Nov 2025

- Developed a context-aware RAG AI for document analysis using IBM WatsonX and LangChain within a 6-hour hackathon
- Engineered a containerized Django/Docker backend to efficiently handle PDF processing and vector embeddings, ensuring environment consistency
- Deployed a decoupled architecture via Render (backend) and Vercel (frontend), integrating Firebase for secure authentication and persistent data storage

Cross-Platform Notes App (C++, Dart, Flutter)

Jun 2025

- Architected a cross-platform MVP using Flutter and Dart, delivering a single unified codebase for both iOS and Android deployment
- Architected a high-performance local data layer in Dart, achieving a verified throughput of 1.5M+ operations/second via rigorous automated stress testing
- Designed a scalable Object-Oriented architecture prioritized for memory efficiency, capable of managing an initial local data volume of 1 GB
- Implemented Firebase Authentication and Realtime Database to ensure secure user sessions and instant multi-device synchronization

Smart Home System (C++, Arduino IDE)

Aug 2025 - Dec 2025

- Developed a smart home ecosystem integrating real-time motion lighting, alarms, and environmental sensors
- Built a wireless IoT network connecting multiple Arduinos via ESP32, Blynk, and NTP synchronization
- Boosted performance 75% and reduced latency by implementing non-blocking I/O for Wi-Fi modules

Leadership & Activities

Women in Computer Science - Aspire To Inspire Mentor

Sep 2025 - Present

- Led and guided two students through the development of personal web portfolios, advising on design, architecture, and deployment best practices
- Coordinated a collaborative team of four (two mentors, two mentees) to architect a real-time chatting application using Django and React
- Defined the initial scope and strategy for implementing AWS deployment and future cross-platform expansion to mobile
- Communicated technical insights and networking strategies, fostering a supportive environment

Work Experience

Compudopt Inc

Aug 2024 - Feb 2025

- Translated complex programming paradigms into accessible K-8 curriculum, covering foundational logic such as loops, control flow, and variable types to build technical literacy for 20+ students per semester
- Directed hands-on engineering workshops utilizing microcontrollers (Arduino) and circuit logic to foster early proficiency in embedded systems and real-world software use cases

Monterrey Security - Event Security

Jun 2025 - Present

- Coordinated logistics for large-scale events (60k+ patrons), collaborating with distributed teams to resolve critical incidents and ensure operational safety