# Gabriel Castillo

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## Education

**Cornell University, College of Arts and Sciences** *Ithaca, NY*
BA in Computer Science *GPA: 3.83*
**Relevant Courses:** OOP & Data Structures (Honors), Discrete Math, Intro to Analysis of Algorithms, Intro to ML

## Technical Skills

**Languages:** Python, Swift, Java, TypeScript, JavaScript, OCaml
**Skills:** LangChain, SQLAlchemy, PyTorch, Firebase, UIKit, JavaFX, Expo, React Native, React, Bootstrap, AWS S3

## Experience

**Cornell University – uTech Lumeo (AQI-Aware Navigation App)** *Ithaca, NY*
*iOS Developer & Researcher* *Feb 2024 – Present*
- Collaborated with 4 devs to build an iOS app with Google Maps SDK and Firebase for real-time AQI-aware navigation.
- Optimized Pareto-efficient algo to process 19,000+ AQI data points, generating routes that balance time and pollution.
- Helped implement Google Air Quality API heatmap overlay with 16 zoom levels, visualizing real-time pollution data.
- Extended routing logic to support 3 transport modes (drive, walk, bike), to minimize commuter pollution exposure.

**rapStudy — US DoE-funded Musical Ed-Startup** *Remote*
*Full-Stack Software Engineer Intern* *May 2024 – Aug 2025*
- Refactored a 5,000+ line React codebase, improving page load times by 30% and increasing customer satisfaction.
- Resolved major Firebase syncing issues, increasing data throughput by 40%, fixing 6 bugs in the process.
- Delivered 3 new features that enhanced platform usability and demo success, expanding user engagement.
- Automated testing suite and deployment system to reduce release and update cycle times by 20%.

**Blue Pond Group Ltd. — Hatch Blue Backed Startup** *Chiang Mai, Thailand*
*Full-Stack Software Engineer Intern* *May 2023 – Aug 2024*
- Built, launched the company website and blog using HTML, CSS, and JS, and automated posting system.
- Developed an iOS app for shrimp farmers using Swift and Firebase with a beta user base of over 30 people.
- Boosted profits by 15% through product placement analysis with Python, enhancing operational decision-making.
- Generated key user analytics and technical documentation required for due diligence from Hatch Blue.

## Projects

**Harbor – Cornell Dating App** ↗ *Jun 2025 – Present*
- Launched a campus-wide dating app, acquiring 40+ active users in the first week of beta testing.
- Spearheaded full stack development with React Native (Expo), TypeScript and Firebase.
- Built secure photo reveal system with an intermediate consent screen using GCloud Storage Signed URLs.
- Engineered an advanced AI recommendation system that learns from a users profile and who they swipe on.

**HSPorter – AI-Powered HS Code Classification System** ↗ *Oct 2025 – Dec 2025*
- Built AI classification system achieving 75-80% accuracy across 19,000+ HS codes for import classification.
- Implemented RAG pipeline reducing 1,264 headings to top 15 candidates, cutting LLM token costs by 98.8%.
- Developed multi-path tree traversal algorithm with confidence-based branching for parallel classification.
- Architected multi-LLM layer supporting 4 providers (OpenAI, Anthropic, Groq, Gemini) with hot-swappable config.

**Odyssey – Interactive OCaml Theorem Prover** ↗ *Mar 2025*
- Worked with 3 others to build propositional logic theorem prover with SAT solving and tautology check.
- Implemented recursive descent parser and AST interpreter in OCaml with 5 logical operators.
- Developed interactive CLI with ANSITerminal for colored output and step-by-step proof visualization.
- Added CNF conversion, DIMACS export, and LaTeX document generation for academic compatibility.

**LockedIn – iOS Swipe-Based Networking App** ↗ *Dec 2024*
- Won best UI (out of 28 teams) at AppDev's Hack Challenge building a LinkedIn-Tinder hybrid native iOS app.
- Developed frontend with Swift and UIKit; integrated Firebase for auth and real time messaging and notifications.
- Helped create and design REST API with Flask, SQLAlchemy; used AWS S3 for image hosting.

**Artificial Life Evolution Simulator** *Aug 2024 – Dec 2024*
- Led a team of four to develop a creature evolution simulation modeling food, reproduction, and mutation.
- Implemented a custom parser and AST interpreter featuring advanced fault injection capabilities for system testing.
- Engineered a high-performance simulation engine and JavaFX GUI to enable seamless real-time user interaction.
- Enabled large-scale simulations of billions of ticks to emulate evolutionary behavior with advanced statistical tracking.