

# Lucas Liao

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## SKILLS

**Languages:** Python, Ruby, Javascript/Typescript, C/C++, Java

**Frameworks:** React/React Native, Ruby on Rails, Next.js, Node.js, Flask, LangChain, Three.js, FastAPI, GraphQL

**Tools:** MongoDB, PostgreSQL, SQLite, Figma, Git, Excel, AWS, Google Cloud, Docker, Vercel

## EDUCATION

### University of Waterloo

Expected August 2028

*Bachelor of Software Engineering (BSE)*

*Waterloo, Canada*

- **CGPA: 90.4/100 (4.0)**

- Relevant Coursework: *ECE (FPGA, VHDL, RISC-V), Data Structures and Algorithms*

## EXPERIENCE

### Incoming Software Engineer Intern

Jan 2026 – April 2026

*WindBorne Systems*

*Palo Alto, California*

### Software Engineer Intern

March 2025 – August 2025

*DitchCarbon*

*London, United Kingdom*

- Enhanced document processing pipeline handling 800K+ documents monthly using **Ruby on Rails**, **Next.js**, and **Google Cloud** for ingestion, classification, and validation.
- Architected end-to-end **agentic QA system** with **MCP server** for GraphQL API and designed custom agentic layer for observability, **reducing manual QA time by 40%**.
- Optimized dashboard load time by 70% through database precalculation and query optimization in **PostgreSQL**.
- Developed **LLM-based** fallback system for external API failures, reducing data gaps by 80%.
- Shipped end-to-end recommendations pipeline leveraging **LLMs** to generate personalized carbon reduction strategies for 1M+ companies, directly contributing to closing Amazon ESG contract.

### Full-Stack Developer Intern

March 2024 – August 2024

*Slime Scholars*

*Waterloo, Canada*

- Spearheaded development of classrooms feature for teacher-student progress tracking and integration with quizzes API, leading to increased user engagement.
- Designed wireframes in **Figma** and implemented designs using **Next.js**, **Typescript**, and **Tailwind**, and implemented **MongoDB** backend using **Node.js** and **Mongoose**.
- Improved lesson design and game balance by conducting market research on platforms like Duolingo and IXL, resulting in a **30% increase** in user sentiment scores.

## PROJECTS

### 🕒 Overseer | *Python, Flask, Cohere API, Next.js, Three.js, Tailwind CSS*

- Designed a bias-mitigation platform for hiring data using **Python/Flask**: embedded resumes, clustered and pruned over-represented groups, and exported balanced datasets.
- Delivered an interactive 3D cluster explorer in **Next.js** + **Three.js** with AI-generated trait summaries via Cohere CMD-A, cutting audit time from hours to minutes.
- Won **"Best DEI AI Hack"** at GenAI Genesis 2025 for impact on fair AI from **600+ participants**.

### 🐳 WhaleBeing | *Python, JavaScript, Flask, React.js*

- Built interactive predictive heatmap for whale-ship collisions with **React**, **Python** and **Flask** to reduce ship strikes in coastal waters in California, implementing prediction model based on 2019 NOAA research paper.
- Created collision risk algorithm using SeaRoutesAPI to support proactive decision-making in commercial ships.
- Placed **1st Overall** and won **James Dyson Award** at DeltaHacks 2025 from **700+ participants**.

### 🕒 Time Machine | *LangGraph, Python, Next.js, FastAPI, SQLite, D3.js, TypeScript*

- Developed debugger for **LangGraph** agents using **Python/FastAPI**, enabling developers to rewind executions and test alternate scenarios across model choices and node parameters.
- Built full-stack web interface with **Next.js** and **FastAPI** featuring flow visualization, node-level execution tracking, and real-time alternate-branch testing with D3.js charts.
- Implemented Python recording system capturing node and execution data in **SQLite**, supporting model comparison.