

# Ethan Xing

226-581-3230 | [e5xing@uwaterloo.ca](mailto:e5xing@uwaterloo.ca) | [linkedin.com/ethanxinguw/](https://www.linkedin.com/ethanxinguw/) | [github.com/gnixnahte](https://github.com/gnixnahte)

## EDUCATION

University of Waterloo, Mechatronics Engineering - Bachelor of Applied Science

GPA: 3.95

*Relevant Coursework: Data Structures & Algorithms, Circuits, Digital Computation, Linear Algebra, Calculus I & II*

## SKILLS

**Programming Languages:** Python, C++, JavaScript, TypeScript, SQL, HTML/CSS, Bash

**Frameworks & Libraries:** React, Next.js, Node.js, Tailwind CSS, TensorFlow, NumPy, Pandas

**Tools & Platforms:** Git, GitHub, Docker, Supabase, Google Cloud Platform, Linux, VS Code

**Hardware & Robotics:** ROS2, SolidWorks, OnShape, AutoCAD, Microcontrollers, Breadboarding, PCB Design

## PROJECTS

**Scribe** | *Python, Tensorflow, Keras, Gemini API*



- Built and deployed a **full-stack handwriting recognition app** with a modular backend pipeline and API-based inference
- Designed a **scalable data processing and inference pipeline** with 7,000+ samples with preprocessing and batching
- Achieved **82% system accuracy** through debugging, pipeline optimization, and iterative performance tuning
- Engineered **robust input handling for noisy real-world data**, improving system reliability and user experience

**AXIOM** | *Mapbox GL, Next.js, TypeScript, Gemini API, Supabase*



- Built a **full-stack AI platform** that models grading schemes across Canadian high schools to **normalize** GPA comparisons
- Developed an **interactive map-based interface** enabling users to explore and compare **2,000+** high schools
- Designed a **multi-agent backend system** to retrieve data, analyze rankings, and answer user queries with grounded data
- Built a **data ingestion and processing pipeline** to structure school data from multiple sources for efficient querying

**Melodica** | *Tone.js, Web Audio API, TypeScript, SupaBase, Google Cloud Platform*



- Built a browser-based **digital audio workstation (DAW)** with an interactive piano-roll interface for music production
- Implemented a **real-time audio scheduling system** using Tone.js and the Web Audio API to ensure precise playback
- **Optimized frontend performance** by implementing **viewport-based loading** to reduce DOM overhead in the editor
- Designed a **scalable JSON-based data model** to enable efficient save/load, state management, and audio export to MP3

**NewDen** | *Python, React, Javascript, spaCy, Gemini API*



- Built a **full-stack NLP system** for scam-detection, helping identify over **3,000 fraudulent housing listings** in Ontario
- **Extracted key structured entities** and used them to **improve** scam detection **beyond keyword-based methods**
- Deployed **end-to-end inference pipeline** enabling automated scam detection on real-world housing data
- **Custom-trained an NER model** (~1,000 samples per entity) to extract structured fields such as address and city name

## EXPERIENCE

**Robotics Software Researcher**

Sep 2025 – Present

*University of Waterloo - Robohub* | *Python, Kortex API, 3D Printing, ROS2*

*Waterloo, ON*

- **Developing high precision software systems** using **Python & hardware APIs** to control a 6-axis robotic platform
- Worked in an **R&D environment**, iterating system behaviors through testing and **debugging in real-world conditions**
- Reviewed **external papers** to inform **system design**, stability and refine overall methodology under Professor Tang

**Executive Director**

Sep 2023 – Jun 2024

*University of Waterloo - Canadian Youth STEM Conference*

*Waterloo, ON*

- Led logistics for a **national youth STEM conference (150+ attendees)** hosted at the **University of Waterloo**
- **Creative Director** for Innovation Challenge, designing prompt, rules, judging criteria, and team-based challenge structure
- Managed **speaker outreach, scheduling, and on-site coordination**, ensuring smooth real-time program execution
- Led **event-day operations**, including setup, sign-in, crowd flow, and speaker mic running in a fast-paced environment

**Tutor & Secretary**

Sep 2021 – Aug 2025

*KUMON Canada - Laurelwood Commons*

*Waterloo, ON*

- Supported academic progress for **400+ students** in math and English by working across all weekly shifts and class levels
- Accelerated early-learner literacy by **completing 2 reading levels (400+ pages) in 2 months**, exceeding typical pacing
- Managed **high-volume operations (3–10 parent inquiries per session)**, overseeing records, inventory, and payments
- Independently resolved **real-time scheduling and operational issues**, frequently covering for understaffed shifts