

Kevin Xu

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EDUCATION

University of Waterloo

Bachelor of Software Engineering (Honours, Co-op)

Sep 2025 – Present

cGPA: 3.7/4.0

EXPERIENCE

Web Developer

Electrium Mobility

Sep 2025 – Present

Waterloo, ON

- Designed a **recursive document-traversal algorithm** to retrieve complete hierarchical document structures, significantly improving **contextual accuracy** of AI-assisted Chatbots
- Enabled **AI-powered question answering** by integrating asynchronous chat-completions calls to DeepSeek with curated knowledge context, producing context-grounded responses in real time.

Robotics Engineer

WATonomous

Sep 2025 – Present

Waterloo, ON

- Implemented a **Pure Pursuit Controller** using **ROS 2** to autonomously guide rover along predefined paths
- Developed **video inference pipelines** for humanoid vision models using **PyTorch** and **OpenCV**

AI Research Intern

University of Alberta

Jun 2024 – Aug 2024

Edmonton, AB

- Implemented an **end-to-end machine learning pipeline** optimized for predicting heart rate through a webcam
- Trained upsampling neural networks, signal quality classifiers, and Convolved Neural Nets using **PyTorch**

PROJECTS

Chess Engine – 1st Place & defeated a FIDE Master at ChessHacks 2025 | *C++, Python*

- Achieved **3400+ CCRL Elo** by applying **Sequential Probability Ratio Testing** to validate improvements
- Implemented high-performance **bitboard logic** for move generation and board representation in **C++**
- Reduced search space and improved playing strength using **heuristic-based pruning** and evaluation algorithms
- Built an **Efficiently Updatable Neural Network** with accumulator and quantization for low-latency evaluation

AI Agents Voice Tutor | *React, FastAPI, WebSockets, httpx, Three.js*

- Built a **multimodal** AI inference stack that converts live/uploaded lecture audio and PDF slides into interactive tutoring by orchestrating streaming **STT**, **vision-grounded LLM** reasoning, and real-time **TTS synthesis**.
- Engineered **RAG-based** slide-script alignment for **context-aware Q&A** and **synchronized** voice delivery.
- Structured the backend with **router/service** architecture, **Pydantic** models, and **async httpx** clients, creating clean API boundaries and maintainable integration points.

Price Predictor | *Next.js, Supabase, FastAPI, Typescript, Python/PyTorch, Scikit-learn*

- Shipped a full-stack web app with **Next.js**, **React**, and **Supabase**, implementing **server actions** and **API routes** for product search, scoring, data retrieval, and query logic (sorting, filtering, ranking, pagination).
- Built a **multi-LLM consensus engine** with structured scoring and weighted fusion for AI buy recommendations
- Developed and trained an **LSTM + FastAPI** forecasting pipeline using **PyTorch** and **Scikit-learn** that forecasts future price/volatility and outputs a probabilistic buy score via **Gaussian-CDF risk modeling**.

HONORS & AWARDS

Codeforces Expert: 1880 Peak Rating

Math/CS Uni Contests: 1st CCPC 2025 Div 1, 2nd ACPC 2024 Div 1, 3rd UAPC 2024 Div 1, 46th UW Local F25, hopefully I can get into ICPC regionals to post on here, 0 on Putnam 2025 and no consistency

Math/CS HS Contests: CCC HR, USACO Gold, CSMC HR, Fermat HR, CMOQR Qualifier, CLMC Canada HM

TECHNICAL SKILLS

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

Frameworks & Libraries: React, Next.js, Express, Node.js, TailwindCSS, FastAPI, RESTful APIs, Flask, PyTorch, Scikit-learn, OpenCV, NumPy, Pandas, Matplotlib

Tools & Platforms: PostgreSQL, Supabase, Pytest, GoogleTest, Git/GitHub, Bash, Linux, Docker, Figma