

Lucas Guo

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EDUCATION

University of Waterloo

Bachelor of Computer Science, Honours

Waterloo, ON

Sept. 2026 – Apr. 2031

IB Diploma Program

Score: 44/45

Surrey, BC

Sept. 2024 – June 2026

- HL Physics (7), Math AA (7), Chemistry (7); self-studied AP CS A, Calculus BC, Physics 1 (all 5s)

AWARDS

USA Computing Olympiad (USACO) | Silver Division

2025

Canadian Computing Competition, Senior Division | Top 25% Distinction

2024

Cayley Mathematics Contest (Waterloo CEMC) | School winner, National Honour Roll

2024

EXPERIENCE

Volunteer Tutor

Nova Bridge Learning & Schoolhouse.world

Feb. 2025 – Present

Surrey, BC / Remote

- Tutor students aged 8–15 in math, chemistry, physics, and English in one-on-one and group sessions, 5 hrs/week
- Mentor incoming volunteer tutors by producing sample lesson videos and giving feedback on their first sessions

Lead Volunteer

SFU Summer Camps

Aug. 2023 – July 2025

Burnaby, BC

- Led and mentored volunteer teams across four engineering, STEM, and sports camp sessions; 200+ volunteer hours
- Designed and ran interactive STEM activities, including bridge stability builds and “doodle bot” construction
- Recognized by the camp director for leadership; offered a paid staff position the following summer

Soccer Referee

District Referee

Jan. 2020 – Present

Surrey, BC

- Officiate U9–U18 youth and provincial (BCSPL) matches; maintain District Referee status through annual certification

PROJECTS

Clash of Clans Farming Bot | Python, OpenCV, NumPy, ADB, pytest

Sept. 2026 – Present

- Built an autonomous computer-vision agent that plays a mobile game end to end from screen pixels alone, with no game API: it navigates menus, reads opponents’ loot, deploys a full army, and tracks winnings
- Designed deterministic vision pipelines: binarized per-digit OCR across three font sizes, morphological ridge detection with ray casting to locate deploy zones, and edge-pair detection for army cards
- Cut per-frame UI matching $50\times$ (616 ms $\rightarrow$ 12 ms) with region-restricted search, and replaced fixed delays with a state-gated loop at ~ 5 fps, eliminating double-tap errors
- Kept vision and policy code pure behind isolated I/O, tested by 157 pytest cases that replay saved frames through the full loop with a fake device and clock, no emulator needed

Orifice Discharge Research | Python, C++

2025 – 2026

- Investigated how viscosity affects the discharge coefficient of a sharp-edged orifice in a 4,000-word research paper
- Wrote Python and C++ programs to process trial data, fit curves, and compare results against theoretical models

Personal Website | Next.js, TypeScript, React, Tailwind CSS

2026

- Merged standalone HTML, CSS, and JavaScript pages into one Next.js app with shared components and routing
- Rebuilt the interface in TypeScript and Tailwind CSS, with continuous deployment from GitHub

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, C++, Java, Racket, SQL (SQLite), HTML/CSS

Frameworks & Libraries: OpenCV, NumPy, pytest, React, Next.js, Tailwind CSS, pandas, matplotlib

Developer Tools: Git, GitHub, ADB, VS Code