

# HAO CUI

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## TECHNICAL SKILLS

**Languages:** Python, C++, Java, Kotlin, TypeScript, JavaScript, HTML, CSS

**Framework & Tools:** React, Next.js, Vite, Tailwind, React Native, Expo, Firebase, WebSocket, Node.js, Git, Figma, Vercel, OpenAI, Gemini

**Machine Learning:** Tesseract OCR, OpenCV, PyTorch, NumPy, TensorFlow, YOLO, Mediapipe

## EXPERIENCE

### Cluely (contract)

Machine Learning Engineer

Sept 2025 - Oct 2025

- Contracted by **Cluely** to design a pilot project that tracks realtime **head pose and gaze**.
- Lightweight, local-only gaze tracking prototype using webcam to infer eye/pupil position and head pose, classifying gaze direction at **15-30 FPS** with **landmark detection** and **temporal smoothing**.
- Designed an architecture achieving **CPU-only** performance with **100ms** latency and dual outputs (debug overlay + NDJSON stream).

### Smashspeed

Chief Technology Officer

May 2025 - Present

- **40k+ downloads across 100+ countries**, amplified by a viral social campaign with **millions** reached.
- Executed an end-to-end port of the machine-learning shuttle tracker to **React Native**.
- Implemented a scalable serverless **Firebase** architecture (Auth, Firestore, Cloud Functions, Cloud Storage).
- Developed the marketing and product website with **React + Tailwind**, sustaining **10k+** monthly active users.
- Helped build the data pipeline using **YOLOv5**, curated and annotated **13k+** images to reach **93% model accuracy**.

### Furious Frogs

Developer

Sept 2024 - Present

- Co-designed the autonomous system that ranked **#191/100,000 competitors** in the 2024 season.
- Implemented an auto-aim pipeline using **AprilTag detection** with **OpenCV** and tuning PID controllers for fast, stable targeting and shot alignment.

## PROJECTS

### Steve the Freakysaur (160,000+ impressions) |

- Won **1st place out of 124 participants and 50+ projects** in BC's largest high school hackathon.
- A Chrome Dino-style game controlled entirely using tongue detection through real-time facial segmentation.
- Prototyped in **Pygame** before being ported to **Next.js** with TypeScript for web play.

### Architectural RAG |

- A **RAG chatbot** that can analyze architectural drawings created for **Fresco YC F24**
- Preprocessed a vector pdf of the plan into a 300 DPI image, then ran multiple different passes of tesseract OCR over the regions of interests to convert the pdf to a json format

### Smashspeed |

- AI-powered badminton tracker that detects shots, estimates smash speed in real time, and visualizes performance trends.
- Reached **40k downloads across 100+ countries**, amplified by a viral campaign with **millions reached**.

## EDUCATION

### Port Moody Secondary School

International Baccalaureate (IB) Diploma Programme

Port Moody, BC

Expected Graduation: 2027

- Academics: 4.0 GPA, Studying Computer Science and Mathematics AA Higher Level.