Stanley Zhou

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Education

University of Waterloo — Waterloo, Ontario
Honours Bachelor of Mathematics in Computer Science (Co-op) — *September 2026 – May 2031*

- Awards: President's Scholarship of Distinction ($2,000), Microsoft Alumni Entrance Scholarship ($2,000)
- Relevant Coursework: Linear Algebra, Proof-based Math, Calculus, Data Structures and Algorithms, Software Engineering, Statistical Analysis

Experience

Computer Vision Researcher — September 2026 – Present
Weizmann Institute of Science – Faculty of Physics, Ant Collective Behavior Group — *Rehovot, Israel (Remote)*

- Designed computer vision pipelines using SLEAP for a **52-camera 4K apparatus**, detecting, identifying, and tracking **700–1,000 ants** in 3D space at **10 fps**.
- Analyzed ant poses and postures using head, thorax, and abdomen landmarks; tracked ant scales and collective chains functioning as weights or zipper-like structures.
- Developing multi-view geometry, cross-camera association, and motion modeling techniques to handle dense ant interactions and partial occlusions.
- Contributing to current experiments and research on individual and collective ant behavior.

Economic Data Research Assistant — December 2023 – September 2024
Smith School of Business – Queen's University, mentored by Dr. Bhargav Gopal — *Kingston, Ontario*

- Fit Fama–French 3-Factor and Carhart 4-Factor models in R on **over 6 million observations**.
- Contributed to a forthcoming corporate governance paper on firms' operating performance following the repeal of government-mandated leadership quotas (California SB-826).
- Analyzed **12 papers** on corporate governance, shareholder rights, valuation, and performance indicators; presented findings at internal meetings to inform the literature review.

Projects

Waterloo Defence – CUAS Computer Vision Project
Python, Dense Neural Networks, Motion Compensation, Kalman Filtering, Small-Object Detection

- Contributing to ICARUS as a software engineer, working on camera-based detection and tracking for small drones in cluttered scenes.
- Developed the Scout module using dense neural networks for sub-16-pixel drone detection on LRDDv3.
- Creating vision components for Waterloo Defence's planned entry to the Canadian Department of National Defence's IDEaS CUAS challenge.

Sherlock – Hackathon Project for HackMIT
Python, FastAPI, Next.js, LangChain, LangGraph, PyTorch, LoRA | Won Hyphenate prize track

- Built Sherlock, an AI financial investigation platform with a FastAPI backend and Next.js interface.
- Orchestrated multi-agent RAG with LangChain and LangGraph for evidence retrieval and financial audits.
- Developed a custom local model pipeline using Qwen3.5-based NuExtract3 and LoRA fine-tuning.
- Linked findings to source citations and deterministic accounting checks for traceable financial analysis.

BananaMOV – Hackathon Project for JamHacks 10
Next.js, TypeScript, Gemini API, ElevenLabs API | Won "Best use of ElevenLabs" prize track

- Built a full-stack app that scores uploaded videos using Gemini 2.5 Flash for visual composition plans and ElevenLabs' Music API for original, timeline-matched music.
- Used Clerk for authentication, Neon Postgres for artifact storage, and Demucs for audio stem separation.

Technical Skills

Languages: Python, C/C++, R, Java, JavaScript/TypeScript, HTML/CSS
Frameworks & Libraries: PyTorch, NumPy, Pandas, Matplotlib, dplyr, React, Node.js, Django
Developer Tools: Git, Docker, Linux/Unix, CLI/Bash, Google Cloud Platform