

RICKY TANG

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EDUCATION

University of Waterloo <i>Honours Bachelor of Software Engineering (Co-op)</i>	Expected Apr. 2030
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EXPERIENCE

Waterloo Aerial Robotics Group (WARG) <i>Python, OpenCV, Pymavlink</i>	Oct. 2025 – Present
<i>Autonomy Software Developer</i>	Waterloo, ON
<ul style="list-style-type: none">Implemented computer vision algorithms using OpenCV for real-time object detection and tracking in aerial imageryEngineered MAVLink workers for heartbeat monitoring, telemetry streaming and command processing via IPC queuesOrchestrated main thread coordinating worker processes, integration testing, and centralized logging across system	
Brick Works Academy	Jun. 2024 – Jul. 2024
<i>Co-op Camp Counselor</i>	Waterloo, ON
<ul style="list-style-type: none">Led robotics programming instruction for 20+ campers, teaching Python integration with LEGO Mindstorms hardwareMentored 7-person collaborative robot development project resulting in functional writing automation robotDesigned 10+ programming challenges for sensor control, motor optimization, and debugging techniques	

PROJECTS

BrainLattice – AI Concept Networks from Any Textbook <i>Python, FastAPI, TypeScript, Next.js, Firebase, GCP, Docker</i>
<ul style="list-style-type: none">Engineered full-stack application transforming 100+ page textbooks into interactive concept networks in <20 seconds using PyPDF extraction, Gemini API, and React Force Graph, replacing linear note-taking with network-based learningArchitected Firebase schema with bidirectional relationships enabling real-time traversal of 200+ concepts with on-demand AI insights (e.g. overviews, formulas, connections) via clickConstructed automated study pipeline generating cheat sheets and realistic audio digests from LLM scripts via ElevenLabsDeployed on GCP with Docker, integrating multiple AI APIs (Gemini, OpenRouter, ElevenLabs) for end-to-end workflow
Post-It – AR Sticky Notes for Real World <i>TypeScript, Snap Lens Studio</i>
<ul style="list-style-type: none">Engineered Spectacles lens enabling users to place 3D sticky notes in physical locations, transforming spaces into shared interactive canvases using World Query Module and Spatial Anchors APIConstructed voice-to-3D pipeline: ASR module transcribes speech, Gemini optimizes prompts, Snap3D generates objectsIntegrated gesture-based interactions via SpectaclesInteractionKit for intuitive note placement and voice activationShipped in 32 hours, achieving semi-finalist at Hack the North 2025 (top 32 out of 256 teams, 1000+ hackers)
FitSage – AI Fitness Companion with Voice Logging <i>TypeScript, Next.js, Supabase, HuggingFace, Gemini API</i>
<ul style="list-style-type: none">Engineered fitness app reducing workout logging time by 5-10x through voice/text input, consolidating logging, training plans, and AI advice from multiple apps into unified platformDeveloped AI pipeline: Web Speech API transcribes input, HuggingFace pre-processes text, Gemini extracts data from unstructured workout entries and generates personalized suggestionsImplemented workout curation analyzing recent activities to detect gaps and dynamically generate 10+ tailored exercisesConstructed dashboard displaying body metrics, intensity charts, and workout history with AI interpretations and advice
CheFlow – Intelligent Recipe & Meal Planning App <i>Processing, G4P (GUI Library)</i>
<ul style="list-style-type: none">Engineered recipe app suggesting meals from available ingredients and time constraints to reduce decision fatigueDeveloped ingredient-matching algorithm using set intersection and scoring to maximize pantry utilizationConstructed data visualizations (scatter plots, regressions, heatmaps) analyzing cooking habitsDesigned interactive GUI with Processing's G4P library for streamlined recipe entry and meal planning workflows

TECHNICAL SKILLS

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

Technologies: React, Next.js, Node.js, Express, FastAPI, Flask, HuggingFace, Tailwind CSS, OpenCV, Pandas, Qt

Development Tools: Git, Docker, Bash, Firebase, PostgreSQL, MongoDB, GCP, Lens Studio, CMake

AWARDS

Canadian Team Math Contest: **3rd Place** Nationally | Euclid Math Contest: **Top 5%** | Canadian Sr. Math Contest: **Top 2%**