Ricky Tang

437-243-5327 | rickytangdev@gmail.com | linkedin.com/in/ricky-tang-dev | github.com/rickytang666 | rickytang.dev

Education

University of Waterloo 2025 – 2029
Honours Bachelor of Software Engineering (Co-op)

Technical Skills

Languages: Python, TypeScript/JavaScript, C++, SQL, Swift, C, Bash, HTML, CSS
Technologies: React, Next.js, Node.js, Express, FastAPI, Flask, RESTful APIs, PyTorch, OpenCV, Pandas, React Native, WebSockets
Development Tools: Git, Docker, Unix, CI/CD, Jest, PyTest, MySQL, PostgreSQL, MongoDB, Firebase, Supabase, GCP, Cloudflare

Projects

Nebula – AI Notes with OCR + Vector Search | *TypeScript, React Native, Python, FastAPI, Supabase, Docker, GCP*

- Developed mobile note app with AI chat leveraging **RAG architecture** to retrieve contextual insights from user notes
- Engineered **pgvector semantic search** with **1536-dimensional embeddings** via IVFFlat indexing for **<1s retrieval**
- Implemented **Mistral OCR** pipeline extracting text and LaTeX math from images, rendering via KaTeX in markdown
- Deployed FastAPI backend on **GCP** via **Docker** with **GitHub Actions CI/CD** and **96% test coverage** using Jest & Pytest

Tark – Google Earth for Game Devs | *TypeScript, Next.js, Python, FastAPI, Leaflet, SciPy*

- Developed web app turning locations into game-ready 3D meshes in **<15 seconds** (typically weeks of manual modeling)
- Processed Mapbox elevation and satellite imagery to generate terrain meshes at **45K+ triangulated faces per second**
- Extracted **2000+ building footprints** from OpenStreetMap and generated textured .obj files for Unity/Blender workflows
- Implemented PyProj geographic-to-metric coordinate system supporting **25+ km²** areas with **7.5m terrain resolution**

BrainLattice – AI Concept Networks from Any Textbook | *Python, FastAPI, TypeScript, Next.js, Firebase, GCP, Docker*

- Developed Next.js + FastAPI web app turning **100+ page textbooks** into interactive concept networks in **<20 seconds**
- Engineered processing pipeline generating **200+ concepts** with AI insights and React Force Graph to visualize networks
- Constructed automated study pipeline with PyPDF extraction and ElevenLabs, generating cheatsheets and audio digests
- Containerized with Docker and deployed on GCP, handling **8+ RESTful API endpoints** for scalable concurrent processing

Post-It – AR Sticky Notes for Real World | *TypeScript, Snap Lens Studio*

- Engineered Spectacles lens enabling users to place shared 3D notes in physical locations with spatial persistence
- Built voice-to-3D pipeline using ASR to transcribe speech and Gemini to optimize prompts for 3D object generation
- Generated spatial objects from voice commands via Snap3D, eliminating manual text input in AR environments
- Integrated **10+ gesture interactions** with **5-meter range** for intuitive note placement via SpectaclesInteractionKit

Experience

Waterloo Aerial Robotics Group (WARG) | *Python, React, Flask, OpenCV, MAVLink* Oct. 2025 – Present
Autonomy Software Developer *Waterloo, ON*

- Streamlined ground station UI with one-click pause/resume for missions, eliminating manual switching for **50+ operators**
- Reduced mission failure recovery time from 30s+ to 3-5s for command pipeline operations (**85% improvement**)
- Engineered full-stack control pipeline with React frontend, Flask-SocketIO backend, and MAVLink for real-time commands
- Implemented OpenCV object detection in aerial imagery and MAVLink telemetry streaming, achieving **80%+ IoU accuracy**

Brick Works Academy Jun. 2024 – Jul. 2024
Co-op Camp Counselor *Waterloo, ON*

- Led robotics programming instruction for **20+ campers**, teaching **Python** integration with LEGO Mindstorms hardware
- Mentored **7-person** team through collaborative robotics project, resulting in functional writing automation robot

Awards

- Hack Western 2025: **Best AI Application Built with Cloudflare**
- Hack the North 2025: **Semi-Finalist** (top 32 out of 256 teams, 1000+ hackers)
- Canadian Team Math Contest: **3rd Place** Nationally | Euclid Math Contest: **Top 5%** | Canadian Sr. Math Contest: **Top 2%**