Maalik Khaial

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Education

University of Waterloo — Waterloo, ON
Bachelor of Applied Science (BASc), Nanotechnology Engineering — *Sept 2022 – Present*

Experience

Instrumentation & Controls Engineer — Jan 2025 – May 2026
AtkinsRéalis

- Standardized design requirements across **multiple time-critical installation projects** by redesigning instrumentation and control systems for nuclear reactor components using CAD and SimuLink, presenting outcomes to project supervisors for review.
- Streamlined processing and conversion of **200M+ documents** and HR workflows by building the Candu AI Tool (CAIT), implementing RAG with Azure AI.
- Cut manual processing time across **100+ on-site construction changes** by automating the approval and planning workflow with VBA and Power BI, turning raw lab data into actionable site requisitions.

Business Analyst / Software Developer — Aug 2024 – Jan 2025
Goodself

- Shipped **full-stack web and mobile features** by building with React, Node.js, and Figma.
- Improved release reliability by engineering a **zero-downtime testing environment**, self-discovering 35% of errors and executing 40% of the resulting fixes.
- Aligned content with **Business Development goals** by creating documentation, publishing educational content, and coordinating seminars with medical experts.

Technical Devices Intern — Aug 2023 – Jan 2024
GAO Tek

- Supported **40+ clients** across technical device categories by developing custom design sheets and component specifications.
- Led a team of **50+ interns** through daily standups after earning a promotion to a coordination role within weeks of joining, while coordinating website design and client database tasks using CSS, HTML, and JS.

Businesses

BirdBrains – AI Math Diagnostics (Founder) | *Python, FastAPI, Vertex AI, Next.js* — Nov 2026 – Present

- Architected a two-stage Gemini pipeline (Vertex AI) that reads handwritten math and classifies errors on a **16-code taxonomy**, grounded RAG-style in a cached curriculum knowledge base at **∼ $0.0045/submission**.
- Built the training and evaluation framework (entity-level sentiment analysis, EWMA mastery ledger, **80-sample gold set** gated on F1 $\geq$ 0.92); shipped FastAPI on Cloud Run with a Next.js frontend.

SwiftSkills – Tutoring Business (Founder) — Jan 2024 – Present

- Founded a tutoring business for **40+ families** across North America: **$60K revenue**, **5+ employees**.
- Built the website and manage budgeting and payroll; BirdBrains grew out of this tutoring work.

Projects

Chirp – AI-Driven Personal Planner | *Node.js, Netlify Functions, OAuth 2.0* — Nov 2026

- Engineered a PWA that ingests a daily Claude-generated JSON brief via a scheduled Node.js ETL pipeline, tracking **100+ items** across job leads, small business leads, coffee chats and outreach.
- Built a key-authenticated serverless REST API (**8 routes**, Netlify Functions + Blobs) linking Claude and Gemini agents (structured JSON output), TickTick over OAuth 2.0, Google Apps Script and an iOS widget.

Talks, Awards & Competitions

Invited Speaker – G2AM 2027 (Graphene, 2D & Advanced Materials) — Paris, Jul 2027

- Only student speaker; talk on AI agents, simulation and computer vision for screening 2D nanocomposites.

1st Place – Waterloo Engineering Competition 2023

- Designed a 3-year battery recycling strategy using AI-sorted electro- and bio-hydrometallurgical separation.

2nd Place – Waterloo Engineering Competition 2024

- Designed the MX680, an assistive shopping drone for elderly and disabled users.

Participant – Ontario Engineering Competition 2024

- Designed a rainwater irrigation system and cable-ferry crossing for Howe Island in place of a bridge.

Skills & Certifications

Technical: Matlab, SolidWorks, Python, SQL, Java, JavaScript, CSS, Node.js, React, REST APIs
Non-Technical: Data Annotation, Report Writing, Research, Business Operations
Microsoft Certifications: AI Training, Server Infrastructure, Natural Language Model Development