


MARCO TAN

Technology Consultant

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SUMMARY

Mechatronics and Biomedical Engineering student at McMaster University. Experience in embedded, web, and machine learning development in professional environments and project settings. Seeking software internship and co-op positions for the summer of 2025.

SKILLS

Languages: C, C++, Rust, MatLab, Maple, Lua, Python, TypeScript

Technologies: GCP, Firebase, Next.js, TailwindCSS, PyTorch, Express, Flask, Fastify, SolidWorks, Autodesk Inventor, KiCAD

EXPERIENCE

- 10/2023 – Present **Technology Consultant** **LocalStudent**
- Spearheaded development of an AI dispute model dataset containing thousands of image and tabular data entries. Images and data were stored using Firebase Storage and Firestore.
 - Led research of different vision-text model architectures for dispute identification, including GPT-4, Gemini, and PaliGemma.
 - Led team of interns on projects to optimize and refine key operational processes and workflows with services like our CRM and data collection infrastructure, used for customer/contractor interactions.
 - Maintained critical operational infrastructure like Twilio, Zapier automations, 3CX, GCP cloud infrastructure, and third-party platforms and services.
 - Built out automatic processes and workflows with no-code and traditional cloud infrastructure services to replace manual operations and boost productivity.
 - Built out reusable macros in Google Apps Script and small, reusable programs in Python for automation of daily, menial but time-consuming tasks.
- 6/2021 – 7/2022 **Mentor** **Brampton Robotics**
- Taught multiple teams of 4+ students C/C++ with the V5 system and PROS real-time operating system for control of VEX robots.
 - Introduced introductory control theory, PID, feedforward systems, odometry, and sensor filtering to teams to improve the control code they wrote.
 - Introduced modelling in Autodesk Inventor to hardware design teams to improve their design and iteration times.
 - Prepared all competition teams by helping to refactor codebases and testing hardware systems.

EDUCATION

- 2022 - 2027 **BEngBME - Mechatronics and Biomedical Engineering** **McMaster University**
- Enrolled full-time. CGPA 3.7. Equipment Manager for McMaster A Cappella (2024). Dry lab member of McMaster iGEM team (2024) researching protein engineering with heuristic algorithms and machine learning.

PROJECTS

- Web Development **Personal Website v4.1** <https://github.com/IonicArgon/web-v4.1>
- New personal/portfolio website built with Next.js and TailwindCSS. Hosted on Vercel. Minimalist design.
- Algorithms **Rastrigin Function-Optimizing Genetic Algorithm** <https://github.com/IonicArgon/GeneticAlgorithm>
- Genetic algorithm implementation in C with elitism, mutation, and crossover. Minimizes the Rastrigin optimization function heuristically.
- Robotics **VEX 2022 Competition Robot Codebase** <https://github.com/Discobots-1104A/2021-2022-branch-sample>
- Codebase containing teleop and autonomous code routines for control of robot during VEX VRC competition matches. PID and feedforward control for autonomous movement and controlled manipulation of actuators. Written in C++ and PROS RTOS.
- Algorithms **Linear Systems Solver in C** <https://github.com/IonicArgon/LinearSystems>
- C implementation of a CSR Matrix Market file reader and linear system solver with Jacobi iteration and Successive over-relaxation methods. Permutation preconditioning of systems to better optimize convergence.
- Applications **Password Manager Implementation in Rust** <https://github.com/IonicArgon/rust-PasswordManager>
- Rust implementation of a CLI-based password manager. Encryption of master password and key derivation done with argon2. Ability to input arbitrary amount of entries with an arbitrary number of fields. Protection of unencrypted passwords in memory via secrecy crate.