


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. Seeking software internship and co-op positions for the summer of 2025.

SKILLS

Languages: C, C++, Rust, MatLab, Maple, Lua, Python, TypeScript, SolidWorks, Autodesk Inventor

Technologies: GCP, Firebase, Next.js, TailwindCSS, PyTorch, Express, Flask, Fastify

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.
- Machine Learning **Customer Dispute Machine Learning Model**
Machine learning dataset and model development for LocalStudent, inc. to identify quality issues with serviced properties and proactively label jobs that may be disputed. Created both the dataset curation infrastructure and experimented with model architectures using Firebase.
- 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-PasswrdManager>
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.

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.

EXPERIENCE

- 10/2023 – Present **Technology Consultant** **LocalStudent**
- Spearheaded development of the AI dispute model dataset and infrastructure.
 - Led team of interns on projects to optimize and refine key operational processes and workflows with student/client interaction.
 - 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.
- GCP / Firebase / PyTorch / Hugging Face / Flask / Playwright / Next.js / TailwindCSS / Chakra UI / Zapier / TypeScript / Python / PyQt5
- 6/2021 – 7/2022 **Mentor** **Brampton Robotics**
- Taught many students C/C++ with the V5 system and PROS kernel. Introduced control theory, PID, feed-forward systems, odometry, sensor filtering.
 - Introduced modelling in Autodesk Inventor to many students.
 - Prepared all competition teams by helping to refactor codebases, testing hardware systems.
- C/C++ / Autodesk Inventor / Control Theory