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 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.

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.

EXTRACURRICULARS

2024 · **McMaster iGEM - Dry Lab Member** — **McMaster University**
- Led research into different machine learning models for protein-ligand affinity binding, including CNNs, Bayesian networks, and transformer-based models.
- Conducted analyes of datasets used in model training with Malahanobis distances and statistical methods.
- Helped design an evolutionary algorithm to engineer proteins with higher binding affinities, with ML-based fitness functions and folding simulations.

EDUCATION

2022 - 2027 · **BEngBME - Mechatronics and Biomedical Engineering** — **McMaster University**
Enrolled full-time. CGPA 3.7. Equipment Manager for McMaster A Cappella (2024). Took courses in software development, algorithms and abstract data types, analog and digital circuits, and design..

PROJECTS

Web Development · **Personal Website v4.1** — **https://github.com/IonicArgon/web-v4.1**
Built a new personal website because the old one didn't satisfy me. Built with Next.js, TailwindCSS, and Firebase. Hosted on Vercel.

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.