

TIAN MA

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EDUCATION

University of Waterloo

Bachelor of Applied Science in Mechatronics Engineering

GPA: 4.0/4.0

Relevant Coursework: Data Structures & Algorithms, Circuits, Statics, Structures and Materials

Sept. 2025 – Apr. 2030

Waterloo, ON

TECHNICAL SKILLS

Software/Embedded: C/C++, Python, TypeScript, FreeRTOS, ESP32, Git, Github, OOP

CAD/CAE/PLM: Creo Parametric, SolidWorks, Star-CCM+, Windchill PLM, AutoCAD, Bluebeam, P&ID, DFM

Other: Microsoft Suite, Google Workspace, Soldering, 3D Printing

EXPERIENCE

Mechanical Design Student | *Creo Parametric, Windchill PLM, Excel*

Jan. 2026 – Apr. 2026

Turn-Key Modular Systems

Oakville, ON

- Managed the **production and release of 200+ fabrication and general assembly drawings** for multi-million dollar pharmaceutical projects
- Streamlined production release workflows by **30% through batch export automation** and developing Windchill PLM version control protocols
- Validated skid design against client P&ID diagrams **ensuring 100% compliance** with client standards
- Designed modular skid frames adhering to **DFM principles to reduce fabrication complexity** and cost

Coreless Composite Airfoil R&D | *Star-CCM+, SolidWorks*

Sept. 2025 – Present

University of Waterloo Formula Electric

Waterloo, ON

- Developed low cost composite manufacturing techniques **reduced aerodynamic package weight by 40%**
- Leveraged lost-core manufacturing and 3D printed design to **reduce fabrication cost by 20%** compared to traditional moulded components
- Fabricated and validated 3 lofted carbon-fiber airfoils for integration into 2027 aerodynamic packages

PROJECTS

RC Plane | C++, SolidWorks, Star-CCM+ | 🌐 github.com/TianMa7/RC_PLANE

- Directed a 3 member team in designing a **100cm wingspan aircraft**; managed project timelines, electronic packaging, and collaborated on overall mechanical design
- Achieved **16%** reduction in weight and a **7:1 lift to drag ratio** by optimizing topology in **SolidWorks** and validating aerodynamic performance in **Star-CCM+**
- Coordinated procurement of materials and hardware, managing delays and changes in scope while **reducing overall cost by 45%** compared to preexisting models
- Implemented PID control loops using **ESP32 and ESP-IDF** to process IMU data for real-time stabilization and flight control
- Optimized aircraft maneuverability by centralizing servo placement, **reducing rotational moment of inertia by 7%** and improving control loop responsiveness

Autonomous Card Dealer | C++, Git | 🌐 github.com/TianMa7/CardDealingRobot

- Led a 4 member team to prototype a mobile robot capable of dealing **20% faster** than human dealers through optimized pathfinding
- Managed project timeline and resource distribution to complete project **2 weeks** ahead of schedule
- Implemented encoder-based odometry to facilitate precise navigation, **reducing positional drift by 30%**
- Fabricated card dealing mechanisms designed to reliably eject individual cards with **less than a 2% error rate**

ESP32 Task Manager [WIP] | Python, TypeScript, C++, FastAPI, React

- Prototyping a **React dashboard for remotely monitoring ESP32-based systems**, including live CPU, memory, and sensor data visualization
- Developing **FastAPI WebSocket endpoints for real-time telemetry streaming and runtime parameter updates**
- Building a **Python backend to process raw sensor data and generate tuning recommendations** for embedded system parameters