





# THOMAS TRAN

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## EDUCATION

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### University of Michigan College of Engineering

Ann Arbor, MI

*Bachelors of Science in Computer Engineering*

*Aug. 2023 - Dec. 2025*

- **Selected Coursework:** Introduction to Embedded System Design, Embedded Control Systems, Computer Organization, Introduction to Signals and Systems, Data Structures and Algorithms, Digital Integrated Circuits
- **Campus Involvement:** Michigan Aeronautical Science Association(MASA) Avionics Project Member, VSA

### University of Michigan Dearborn

Dearborn, MI

*Bachelors of Science in Computer Engineering*

*Aug. 2021 - Aug. 2023*

## EXPERIENCE

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### Michigan Aeronautical Science Association(MASA)

Ann Arbor, MI

*Avionics Project Member*

*Sept. 2024 - Present*

- Driving development of 2.4GHz LoRa-based telemetry system in a 10+ person Avionics team for real-time rocket flight data transmission, using dual-antenna ground station to enhance signal reception at altitudes up to 75,000 feet
- Orchestrating integration of radio systems with microcontroller firmware to achieve 40Kbps telemetry data rate
- Conducting RF link budget analysis and optimization to achieve -123.9 dBm received power sensitivity at 20km range

### Kura Sushi Novi

Novi, MI

*Server*

*Jul. 2022 - Mar. 2023*

- Collaborated with a diverse 4-member rotating team to exceed monthly sales targets by an average of 5%
- Resolved customer concerns efficiently, maintaining a 87% satisfaction rate based on feedback surveys
- Adapted to peak hour rushes, serving up to 20 tables per day while maintaining quality service standards

## PROJECTS

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### Haptic Interface Virtual Worlds Simulation

- Engineered an embedded control system with quadrature decoding and PWM modulation to create interactive virtual environments on an S32K144 microcontroller, implementing haptic feedback with angle and torque resolution
- Developed virtual world algorithms including virtual spring, wall, and damper models with torque control mechanisms
- Calibrated PWM output ranges and designed state-transition logic to simulate mechanical interactions with precision

### Memory-Mapped I/O System with FPGA Integration

- Implemented memory-mapped I/O system integrating STM32 MCU with GOWIN FPGA using Flexible Memory Controller (FMC), enabling hardware-level control of external peripherals through memory address space
- Created Verilog modules for bidirectional data transfer between microcontroller and FPGA, including D-latches and tri-state buffers, achieving reliable read/write operations with proper setup/hold timing
- Utilized RGB LED control system with push-button inputs, implementing state design in C for safe user interaction
- Employed logic analyzer to verify bus timing, debugging multi-byte memory transactions with signal analysis

### 8-Bit Dual-Mode Ripple-Carry Adder

- Developed an 8-bit dual-mode ripple-carry adder using pass transistor logic in Cadence Virtuoso using Differential Cascode Voltage Switch Logic for high-speed operation, achieving 1GHz clock frequency at low power consumption
- Designed synchronous reset logic and dual operating modes, performing extensive timing verification and power analysis

### Vehicle Cruise Control Simulation

- Developed a Simulink-based simulation of a cruise control system, applying principles of control theory to model vehicle dynamics, achieving performance optimization with minimized steady-state errors and controlled oscillations
- Analyzed system stability under varying conditions, achieving critically damped response within 1 m/s steady state error

## TECHNICAL SKILLS

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**Languages:** C++ 20, C 17, Python 3.11, Verilog, ARM

**Software:** ModelSim, Quartus, Cadence Virtuoso, SPICE, Matlab/Simulink, Altium, Intel/Altera FPGA, STM32

**Libraries, Tools, Technologies:** CMake, GDB, JSON, openFrameworks, Linux, Git, VS Code, MacOS, Windows