

# Tristan Yan-Klassen

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## TECHNICAL SKILLS

**Applications:** SolidWorks (CSWP), KiCAD, MATLAB, Simulink, VBA, Git

**Manufacturing:** 3D Printing, CNC, Mill, Lathe, Sheet Metal, DFMA, GD&T, PCBA, Soldering

**Hardware:** Oscilloscope, Signal Generator, Multimeter | RPi, Arduino, Teensy, ESP32, STM32

**Embedded:** C, C++, Python | I2C, SPI, CAN, UART, PWM | ROS

## WORK EXPERIENCE

### Jr. Hacksmith - Hacksmith Industries

Sept. 2025 – Present

- Created a Fallout Pip-Boy with an OpenCV VATS system, showcased in a YouTube video with 500k+ views.
- Implemented co-moving position-based tracking, teach and repeat, and teleoperation on a robot arm.
- Developed custom inverse kinematics, motion planning, and control loops for stable camera tracking.
- Developed a robot chassis with both manual and autonomous remote control and modular tool mounting.

### Engineering Intern - Oxygen8 Solutions Inc.

Jan. 2025 – Apr. 2025

- Designed and implemented HVAC unit wire harnesses to cut material cost 30% and assembly time 75%.
- Created global electrical standard for unit wiring and standard templates for SolidWorks Electrical.
- Conducted DFMA analysis of Terra 2.0 to reduce part count by 56% and assembly time by 20%.
- Designed PCB to detect shorts and incorrect wiring, halving rate of defects delivered to production floor.

## PROJECTS

### Inertial Navigation System

- Developing Kalman filter for real-time dead reckoning fusing accelerometer, gyroscope, and magnetometer.
- Designing STM32 shield for high-speed IMU interfacing, low-latency sensor fusion and real time output.

### HMI and Motor Control PCB

- Designed and brought up custom PCB powered off USB C to control a multi-scent diffuser.
- Utilized an ESP32 chip for wireless interfacing, motor control, sensor feedback, and SPI LCD display.
- Developed C++ firmware to handle user inputs, sensor data, device state transitions, and display updates.

### Fallout Pip-Boy

- Integrated geiger, radio, and inputs with a Teensy MCU over serial to a Raspberry Pi to control the device.
- x
- x

### Autonomous Robot Chassis

- x
- x

## DESIGN TEAMS AND VOLUNTEERING

### Physics Olympiad Coach and Volunteer Lead - UBC Physics and Astronomy

Jan. 2025 – Present

- Coached Physics Team Canada to an all medalist result at the 2025 International Physics Olympiad.
- Led team of 10 to found the Canadian Junior Physics Olympiad to prepare students for IPhO selection.

### Aerodynamic Controls Development - Waterloo Rocketry

Sept. 2024 – Present

- ClosedRocket 1
- ClosedRocket 2

## EDUCATION

### BASc. Mechatronics Engineering - University of Waterloo, GPA: 4.0 (1st in Class)

Sept. 2024 – Present