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PERSONAL PROJECTS

Robotic Arm

- Designed and built an advanced multi-axis robotic arm powered by a high-precision servo motor, ensuring smooth, accurate, and repeatable motion.
- Developed a dual-control system that allows the arm to be operated either through a joystick or an infrared remote, providing flexible and user-friendly interaction options.
- Implemented independent activation for each control mode, enabling safe switching between joystick and remote inputs without interrupting operation.
- Constructed and optimized the electronic circuitry and control logic to ensure stable power delivery, efficient signal processing, and consistent servo performance.

Motion Detection Fan

- Operates using ultrasonic sensor, when user is within 30cm, will activate and run fan using motor
- Built a motion-activated fan system using Arduino, an ultrasonic sensor, and an L293D motor driver to automatically control fan operation based on proximity.
- Optimized motor control and sensor handling to ensure smooth, reliable operation and accurate detection.

Anti-Procrastination Tool

- Built an ultrasonic-based study timer using Arduino, integrating an LCD display, buzzer, and distance sensing to track focus time based on presence detection.
- Programmed real-time distance measurements and conditional countdown logic, initiating a study timer when the user is within range and triggering alerts when they step away.
- Designed a clear LCD interface that displays remaining hours and minutes, automatically resets when out of range, and provides completion messages.
- Implemented an interactive reset button with state tracking to allow quick timer resets and reliable user control.

EDUCATION

- **Toronto Metropolitan University** - B.eng, Mechatronics Engineering (Expected graduation 2029)
- **Donald A. Wilson SS** - Graduated with 4x Honour Roll, 90%+ admission average

TECH STACK

- Engineering: CAD Design, 3D Modeling, Mechanical Design, Robotics, Control Systems, Kinematics
- Software: SolidWorks, AutoCAD, MATLAB, Python, C++, Simulink
- Web Development: HTML5, CSS3, JavaScript (ES6+), React.js, Tailwind CSS

SKILLS

- Circuit Design, Microcontroller Programming & Embedded Systems
- Mechanical Design, Prototyping & CAD Modeling
- Sensor Integration, Automation & Control Systems
- Rapid Prototyping, Iteration & Hardware-Software Integration
- High Level, Team Oriented Problem-solving ability