

# Jaemin Cho (226) 506 4285 | justin\_cho@icloud.com | 200 Callaway Rd. London, ON, N6G 3X6

## Education

<b>Bachelor of Engineering Science Mechatronic Systems Engineering</b>	Class of 2027
<b>Bachelor of Engineering Science Artificial Intelligence Systems Engineering</b>	Class of 2027

*University of Western Ontario - London, ON*

**Relevant Coursework:** Electric Circuits, Mechanics of Materials, Finite Element Methods, Engineering Dynamics, Thermodynamics, Fluid Mechanics, Heat Transfer, Embedded Systems, Control Systems, Time Series Analysis, Electric Motors and Drives, Reinforcement Learning, Microcontrollers and Microprocessors

**Technical Skills:** Microcontrollers (ESP32, Arduino, Raspberry Pi), Circuit & PCB Schematic Design, Optocouplers, Signal Conditioning, C/C++, Python, MATLAB, ROS, SolidWorks (2 yrs), GitHub, MySQL, Visual Studio Code, OpenCV, Quartus

## Work Experience

<b>Communications Engineering Co-op Student</b>	May 2025 – Aug. 2025
---	----------------------

*NAV CANADA – Ottawa, ON*

- Authored detailed technical reports explaining hardware-software system interactions, ensuring project traceability and SR&ED documentation readiness.
- Designed and built a high-frequency radio transmitter emulator using Raspberry Pi and Python, integrating GPIO relay control for dynamic frequency and AM mode switching.
- Engineered transistor-based level shifting circuits with 2N3904 BJTs to safely convert 3.3V signals to 24V for MOXA digital I/O, enabling industrial-grade hardware interfacing.
- Developed fault detection, state logic, and timing control systems, utilizing oscilloscopes, multimeters, and other electrical test instruments to support troubleshooting and validation.

## Projects

<b>Autonomous Gem-Collecting and Sorting Robot</b>	Jan. 2025 – Apr. 2025
--	-----------------------

*Mechatronic Systems Design – University of Western Ontario*

- Programmed C++ firmware on ESP32 to control gem detection via TCS34725 color sensor and actuate a servo-driven sortation mechanism, integrating sensor feedback for real-time classification and dumping logic.
- Designed the full robot in SolidWorks, including the chassis, wheel system, gem scoop arm, and Pac-Man style sortation wheel, ensuring proper fit, motion constraints, and manufacturability.
- Validated system performance using real-time sensor feedback, optimizing reliability under varying operating conditions.

<b>SolidWorks Servo Motor &amp; Radio Model Design</b>	Sept. 2024 – Apr. 2025
--	------------------------

*Western Engineering Mars Rover Team – University of Western Ontario*

- Communicated system design trade-offs in rover servo assembly to multidisciplinary team.
- Designed, simulated, and validated a custom servo assembly integrated into a planetary rover chassis, addressing mechanical and electromechanical system constraints.
- Programmed radio communication systems with C++ for extended-range, low-latency control.

<b>Air Quality Prediction Using Time-Series Forecasting</b>	Sept. 2024 – Dec. 2024
---	------------------------

*Introduction to Machine Learning – University of Western Ontario*

- Developed a Python-based ML pipeline, applying structured data preparation, feature engineering, and model selection using Pandas, NumPy, and Scikit-learn.
- Delivered final project report and presentation, detailing system performance metrics and proposed improvements.

<b>Tic-Tac-Toe with Gretchen (Humanoid AI Robot)</b>	Summer 2024
--	-------------

*First Steps in Programming a Humanoid AI Robot – Seoul National University*

- Built a vision-based game-playing robot using OpenCV for color segmentation and grid recognition, and ROS for handling game logic and interaction timing with a humanoid robot.

## Activities and Leadership

<b>Remote Stations Team Member</b>	Dec. 2025 – Present
------------------------------------	---------------------

*Western Skylark CubeSat – University of Western Ontario*

<b>General Member, Software Department</b>	Sept. 2024 – Apr. 2025
--	------------------------

*Western Engineering Mars Rover Team (WE MARS) – University of Western Ontario*

- Collaborated with mechanical and electrical teams on subsystem integration and coordinating design validation