# EANA HAN

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## EDUCATION

**University of Waterloo** – Waterloo, ON
BASc in Honours Mechatronics Engineering with Computing Option | Converted CGPA: 4.0/4.0 (91.66%) *Sept 2019 – Apr 2024*
With Distinction – Dean's Honours List

- Relevant courses: Medical Physics | Modern Physics | Quantum Mechanics | Experimental Measurement & Statistical Analysis | Numerical Methods | Control Systems | Simulating Neurobiological Systems | Multi-sensor Data Fusion | Autonomous Mobile Robots

**Korea Advanced Institute of Science & Technology (KAIST)** – Daejeon, South Korea
Academic Exchange Term *Sept 2022 – Dec 2022*

## INTERNSHIP EXPERIENCE

**ATS Corporation** – Cambridge, Canada
*Controls Systems Software Designer* *May 2023 – Aug 2023*

- Integrated and tested control systems for multi-robot automation cells for manufacturing General Motors' EV battery modules.
- Debugged low-level control software while ensuring code compliance with internal General Motors standards.
- Implemented human-machine interfaces (HMI) and conducted I/O checks, safety testing, and dry runs for robots and machines.

**ATS Corporation** – Cambridge, Canada
*Mechanical Designer* *Jan 2023 – Apr 2023*

- Conceptualized and designed mechanical components and assemblies for automated manufacturing systems in SolidWorks, focusing on optimizing designs for assembly efficiency and manufacturability.
- Collaborated with cross-functional teams to refine designs, ensuring alignment with customer requirements and performance.
- Utilized product lifecycle management software to manage documentation and streamline the product development process.

**KIRCHHOFF Automotive** – North York, Canada
*Manufacturing Engineering Specialist* *Jan 2022 – Apr 2022*

- Conducted cycle-time studies of assembly line processes, implementing solutions that yielded annual cost savings of over $20k.
- Enhanced robot operations by refining weld parameters and movement sequences, improving line efficiency.
- Spearheaded a project to reduce weld defects through data analysis and collaboration with technicians and the quality team.

**Pro Watts, Inc.** – Markham, Canada
*Electrical Design Assistant* *May 2021 – Aug 2021*

- Created contract proposal for renewable energy system integration, resulting in the company winning a 3 year contract (Vale Canada Overflow Engineering).
- Developed electrical schematics for industrial applications using AutoCAD Electrical, ensuring accurate system designs.

**Virtek Vision International** – Waterloo, Canada
*System Quality Assurance Analyst* *Sept 2020 – Dec 2020*

- Improved the precision and reliability of laser projectors through quality assurance testing of the software and hardware.
- Automated test cases using Python on TestComplete and contributed to the goal of continuous deployment.

## VOLUNTEERING

**Holland Bloorview Kids Rehabilitation Hospital** – Toronto, Canada
*Complex Continuing Care (CCC) Volunteer* *Nov 2024 – Present*

- Assisted Therapeutic Recreation staff in creating a safe and supportive environment for youth aged 7–18 with disabilities, providing hands-on and verbal assistance during weekly recreational art activities.

**Kintore College** – Toronto, Canada
*WEEKdays Program Math Tutor* *Sept 2020 – Aug 2021*

- Provided weekly online math tutoring in Advanced Functions and Calculus to female high school students, helping them overcome academic challenges and achieve success during the COVID-19 pandemic.

**Korean Canadian Scholarship Foundation (KCSF)** – Toronto, Canada
*KONNECT Mentorship Camp Leader* *Oct 2019 – Aug 2020*

- Organized a three-day program providing personal growth, leadership skills, and career guidance to high school students.
- Collaborated with a team of undergraduate students and young professionals to create engaging workshops and activities.

## PROJECTS

**Ball And Beam Controller Design** *Sept 2023 – Dec 2023*

- Developed a control system to track an input signal for target ball position using control theory within MATLAB and Simulink.
- Implemented the controller with C++ in LabVIEW and fine-tuned the control system to minimize overshoot and achieve fast response times, showcasing skills valuable for technology that requires precise control.

**Aiming System Control Design** *Jan 2024 – Apr 2024*

- Designed and implemented control systems for SISO and MIMO aiming systems using MATLAB, applying control system theory.
- Derived and calculated system responses, refining the design to achieve precise control despite the base's variable position.

**Algorithm Development and Simulation of Autonomous Robot** *Sept 2023 – Dec 2023*

- Developed Python code for ROS2 on Ubuntu to map and localize an area to perform autonomous path planning and traversal.
- Refined code through Gazebo and RViz simulations, and subsequent testing with TurtleBot in a physical environment.

**Firefighting Robot Research & Design** – MR (Microrobot Research) Club, KAIST *Sept 2022 – Dec 2022*

- Designed a firefighting robot concept, researching feasibility and societal impact while interviewing stakeholders for insights.
- Presented project findings to peers and faculty, demonstrating technical communication and applied research skills.

**Robotic Compost Dehydrator System** – Capstone, University of Waterloo *Sept 2023 – Apr 2024*

- Designed a robotic system to automate composting, performing heat transfer simulations to ensure safety constraints.
- Prototyped 3D-printed parts in SolidWorks, laser-cut components in AutoCAD, and created electrical schematics in KiCad to connect Arduino-controlled sensors via I2C.

## AWARDS

Dean's Honours List (2023)
Kothari Family International Experience Award
University of Waterloo President’s Scholarship of Distinction
University of Toronto National Book Award
President’s International Experience Award
Dean's Honours List (2021)
Governor General's Academic Medal
Schulich Leader Nominee

## SKILLS

**Programming:** MATLAB | Python | C++ | C | PLC Ladder Logic
**Software Tools:** Simulink | ROS2 | Arduino | LabView | Git | Ubuntu | Gazebo | Rockwell Studio 5000
**Modelling & Design:** SolidWorks | Finite Element Analysis (FEA) | Thermal Analysis | 3D Printing | AutoCAD | KiCad