EANA HAN

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EDUCATION

UNIVERSITY OF WATERLOO – Waterloo, ON, Canada
BASc in Honors Mechatronics Engineering with Computing Option | CGPA: 3.95/4.0 (91.2%) *Sept 2019 – Apr 2024*
With Distinction – Dean's Honors List

- Relevant courses: Multivariable Control Systems | Digital Control Applications | Multi-sensor Data Fusion | Robot Manipulators | Simulating Neurobiological Systems | Autonomous Mobile Robots | Electromechanical Machine Design | Understanding Music & Brain

INTERNSHIPS

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

- Integrated and tested controls systems for automated manufacturing cells for GM's EV battery modules.
- Debugged Allen Bradley PLC ladder logic in Studio 5000 while ensuring code compliance with internal GM standards.
- Verified proper communications with the cell by reviewing electrical schematics, network diagrams, and mechanical drawings.
- Implemented FactoryTalk View HMI, set up Siemens support hardware, and conducted thorough I/O checks and safety testing.

ATS CORPORATION – Cambridge, ON, 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 Upchain PLM and ERP software to support resource management and organization of shop floor layout.

KIRCHHOFF AUTOMOTIVE – Toronto, ON, 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.
- Optimized robot operations by refining weld parameters and improving robot movement sequences, enhancing line efficiency.
- Spearheaded a project to reduce weld defects by analyzing data trends and collaborating with the quality team, achieving significant cost reductions and a quick ROI.

PRO WATTS, INC. – Toronto, ON, Canada
Electrical Design Assistant *May 2021 – Aug 2021*

- Developed electrical schematics for industrial applications using AutoCAD Electrical, ensuring accurate system designs.
- Conducted research and cost analysis for battery energy storage solutions, contributing to sustainable energy projects.

RESEARCH & PROJECTS

FIREFIGHTING ROBOT RESEARCH & DESIGN – 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.

BALL AND BEAM CONTROLLER DESIGN – Digital Control Applications, University of Waterloo *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 – Multivariable Control Systems, University of Waterloo *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.

AUTONOMOUS ROBOT CONTROL STACK – Autonomous Mobile Robots, University of Waterloo *Sept 2023 – Dec 2023*

- Developed Python code for ROS2 on Ubuntu to map and localize an area to perform autonomous path planning and traversal.
- Implemented PID control, Kalman Filter localization, and path planning algorithms such as A* and RRT*.
- Refined code through Gazebo and RViz simulations, and subsequent testing with TurtleBot in a physical environment.

ROBOTIC COMPOST DEHYDRATOR SYSTEM – Capstone, University of Waterloo | website *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.

VOLUNTEERING

KINTORE COLLEGE – Toronto, ON, 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.

KCSF (KOREAN CANADIAN SCHOLARSHIP FOUNDATION) – Toronto, ON, 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.

AWARDS

Dean's Honors 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 Honors 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
Interests: Sketching & Painting | Travel | Taekwondo (4^{th} Dan) | Skateboard | Matcha