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

EXPERIENCE

ATS CORPORATION (INDUSTRIAL AUTOMATION DIVISION) – 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.

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.

VIRTEK VISION INTERNATIONAL INC. – Waterloo, ON, Canada

System Quality Assurance Analyst *Sept 2020 – Dec 2020*

- Improved software quality for laser projection systems by identifying and resolving over 30 critical defects through QA testing.
- Collaborated with hardware engineers to calibrate systems and validate firmware, ensuring optimal performance and accuracy.

PROJECTS

BALL AND BEAM CONTROLLER DESIGN – MATLAB, Simulink, C++, LabVIEW *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 – MATLAB, Control Theory *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 – Python, ROS2, Gazebo, Ubuntu CLI *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 – SolidWorks, Simulation, AutoCAD | 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.

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