Harsh Kachhia

3rd Mechatronics Engineering Student

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WORK EXPERIENCE

Application Engineer Intern
Bluewrist Inc.

09/2023 - Present *Markham, ON*

Achievements/Tasks

- Integrated industrial and collaborative robots (Fanuc, ABB, TM, UR) with precision vision systems to enable product defect detection while maintaining operational efficiency within the automotive workflow.
- Undertook feasibility studies and proof-of-concept tests with customized test environments, fabricated application-specific end-of-arm tooling, and developed fixtures to perfectly align with the unique demands of each client or application

Automation Process Engineer Intern
Leclerc Foods

07/2023 - 09/2023 *Brockville, ON*

Achievements/Tasks

- Contributed to process optimization by creating Standard Operating Procedures (SOPs) and precise work instructions for diverse recipe formulations. Additionally, led kaizen and 5S initiatives, resulting in a streamlined workflow
- Performed data-driven centerline assessments, time studies and maintenance instructions, resulting in a 50% reduction in changeover times for bake and packaging lines
- Collaborated with Automation Engineers to conduct MCC panel audits, marking up modifications on drawings and updating AutoCAD Electrical documentation

Mechatronics Engineer Intern
Stackpole International Inc.

05/2022 - 09/2022 *Toronto, ON*

Achievements/Tasks

- Created and implemented automotive-standard verification and validation (V&V) testing procedures for mechatronic pumps, meeting ISO, IEC and ASPICE requirements/standards
- Conducted benchmark testing and sensor calibration for mechatronic pump characterization. Analyzed results, mapping key performance parameters to environmental conditions and system requirements to drive future design improvements
- Applied GD&T and reviewed 2D/3D mechanical drawings to conduct tolerance stack analysis for pump parts, ensuring desired performance and functionality
- Assisted warranty returns and conducted root cause analysis (RCA) to develop effective resolution and mitigation plans for production pump issues, supporting studies and examinations

SKILLS

Python, C/C++ | Control Theory (Simulink, MATLAB)

CAD Modeling & Simulation (Solidworks, Siemens NX)

Prototyping & Manufacturing (GD&T, DFM, DFA)

Analog/ Digital Circuit Design (Multisim, Xilinx)

Communication Protocols (I2C, SPI, UART, CAN, LIN)

Web Development (HTML, CSS, JS, React, Django)

Use of Oscilloscope, Multimeter & Spectrum Analyzer

PROJECT EXPERIENCE

Personal Portfolio Website

- **URL:** harshkachhia.github.io/
- Created a responsive personal website to showcase the Mechanical, Electrical and Software projects completed, along with their respective files, code & working video

EV - Regenerative Braking Model (02/2023 - 04/2023)

- Designed and tested a comprehensive software simulation of a EV power electronics module utilizing Simulink, while developing a system model for efficient energy conversion
- Implemented a hardware solution using Arduino, PM DC Motor, Buck Boost module, and integrated DC-DC and AC-DC converters

Smart Home Security System (03/2023 - 04/2023)

- Developed a miniature smart home security system with Arduino, integrating digital and analog sensors (photocell, PSD, infrared, sound, and touch) to detect light changes, motion, interruptions, noise levels, and physical contact for comprehensive intrusion detection

Microprocessor Digital Counter (03/2023 - 04/2023)

- Designed and developed a digital circuit system utilizing the Xilinx FPGA design tool to count the number of guests entering a restaurant's drive-thru for statistical analysis, incorporating various components such as logic gates, registers, storage elements, and counters, with the output displayed using a 7-segment display

EDUCATION

B.Eng(Hons) Mechatronics Engineering
OntarioTech University

09/2020 - Present *Ontario, Canada*

Certifications & Relevant Coursework:

- SOLIDWORKS **Mechanical Design Associate** Certified
- Lean **Six Sigma Yellow Belt** Certified
- President's List F2020 & W2021, Dean's List F2021 & W2022
- Control Systems, Actuators & Power Electronics , Sensors & Instrumentation, Microprocessors & Digital Systems, Structures & Properties of Materials