Bryce Nielsen

London, Ontario | 647-236-7231 | bnielse6@uwo.ca

Education

University of Western Ontario 4TH Year

B.E.Sc Mechatronic and Artificial Intelligence Systems Engineering

Relevant Courses: Foundations of Engineering Practice, Inductive University, Software Design for Systems Engineering Algorithms and Data Structures for Object Oriented Design, Programming Fundamentals for Engineers, Database Management Systems, Intro to Machine Learning, Data Engineering, Deep Learning for Time Series Data (In Progress) and Reinforcement Learning (In Progress).

Skills: Ignition, Java, Python, SolidWorks, MATLAB, Machine Shop Trained, Advanced Microsoft Excel/Word, Reading Engineering Drawings, WHIMIS, Proficiency in French, safeTALK Suicide Prevention Certified, SQL, C#, Azure DevOps Service, Arduino.

Extracurriculars: Western Engineering Toboggan Team, Western Engineering Mars Rover Team

Projects

Ticketing & Event Management System September 2024 – December 2024

- Developed a Ticketmaster-style web application in Ignition with a fully designed SQL database backend. The system allowed users to browse events, purchase tickets, and buy merchandise.
- Designed and implemented a relational database schema with tables for customers, events, venues, tickets, shopping carts, and merchandise.
- Created SQL triggers to enforce data integrity (e.g., automatic shopping cart creation for new users, validation of phone numbers and birthdates).
- Built stored procedures to automate ticket and merchandise generation, supporting multiple ticket types and scalable product assignments.
- Developed views and queries to provide insights such as customer purchase summaries and ticket availability.
- Integrated database operations into an Ignition-based frontend, providing an interactive interface for event browsing and ticket/merchandise management.

Autonomous Scavenger Robot January 2025 – April 2025

- Designed and built an autonomous robot capable of navigating a fixed area, collecting color-coded objects, and sorting them within strict time limits. The system was powered by an ESP32 microcontroller and combined mechanical, electrical, and software subsystems to achieve fully autonomous operation.
- Implemented a two-wheel drive system with ultrasonic and infrared sensors for navigation, obstacle avoidance, and homing to a base station.
- Designed and 3D-printed a lightweight mechanical collection and sorting system, including a rotating arm and servo-operated funnel for real-time color-based classification.
- Developed Arduino-based software to integrate locomotion, collection, sorting, and depositing phases, with simultaneous state execution for smoother transitions.
- Overcame challenges with sensor calibration under varying conditions, wheel traction on multiple terrains, and system reliability through iterative testing and refinement.
- Delivered a functional robot that successfully met project objectives within constraints on budget, weight (<1kg), and runtime (120s).

SolidWorks Servo Motor & Radio Model Design September 2024 – April 2025

- 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 communications systems with C++ and Python for extended-range, lo-latency control, incorporating best practices in aerospace communication reliability.

Air Quality Prediction Using Time Series Forecasting September 2024 – December 2025

- 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.

This Weeks Top-Rated Movies January 2024 – April 2024

- Integrated IMDb and Movie DB API's using Python, customizing data models, sorting algorithms to display the top-rated movies of any given week in the year.
- Managed project with an agile approach through weekly sprints
- Utilized Docker to containerize the final project, enabling for seamless deployment and maintaining a consistent environment for testing and API access across various platforms.

Work Experience

Convergix Automation Solutions *Oakville, Ontario*

Information Systems Developer May – August 2024 & 2025

- Developed automated testing platform within Azure Dev Ops, implementing various unit tests using C# for Database queries and project code validation.
- Created stored procedures, tables, functions all with SQL to handle and develop data collection through the use of a relational Database system.
- Developed and Produced HMI screens within Ignition, while styling the screens with CSS principles.
- Utilized Python Code and Python Libraries within Ignition to develop UDT management and UDT handshaking between Ignition applications and PLC's.
- Developed team wide Onboarding Project that contains project workflow from Database development, interfacing Ignition, Python Ignition coding, HMI screen creation and automated testing in C# and Python.

Western University Housing *London, Ontario*

Residence Don (LLC) August 2023 – April 2024

- Build community and facilitate a safe learning environment. Assisted students in their growth and transition into university life.
- Experience with high-level mental health situations and appropriate crisis measures.
- Develop and facilitate initiatives that address the needs of the residence community and implement the Community Development Model set out by the Division of Housing & Ancillary Services.
- Supported and mentored various first-year students with interpersonal and academic issues.

Honors

Student Scholarship – Convergix Automation Solutions. August 2022-Present
Extended French Certificate – Cardinal Leger Secondary School June 2022
Deans List – Western University September 2024 – April 2025

Interests

Interests: volunteering, sports, learning about manufacturing processes, programing, CAD design