RICHARD AUGUSTINE

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EDUCATION

Bachelor of Engineering Science (BESc.) Sept 2022 — Apr 2026
University of Western Ontario

- Mechatronics Systems and Artificial Intelligence Engineering (BESc. Dual Degree)
- Dean's Honor List (2022, 2023)
- **Relevant Coursework**: Business for Engineers (BUSINESS 1299E), Discovering Chemical Energetics (CHEM 1302A), Properties of Materials (ENGSCI 1021A), Engineering Statics (ENGSCI 1022Y), Programming Fundamentals for Engineers (ENGSCI 1036B), Foundations of Engineering Practice (ENGSCI 1050), Linear Algebra and Numerical Analysis for Engineers (NMM 1411B), Calculus for Engineers I (NMM 1412A), Calculus for Engineers II (NMM 1414B), Physics for Engineering Students I (PHYSICS 1401A), Physics for Engineering Students II (PHYSICS 1402B), Engineering Shop Safety Training (MSE 2200Q), Mechanics of Materials (MSE 2212A), Engineering Dynamics (MSE 2213B), Thermodynamics (MSE 2214A), Fluid Mechanics and Heat Transfer (MSE 2273B), Introduction to Hip Hop (MUSIC 2703A), Special Topic in Music History: K-Pop (MUSIC 2709B), Applied Mathematics for Engineers II (NMM 2270A), Applied Mathematics for Electrical and Mechanical Engineering III (NMM 2276B), Algorithms and Data Structures (SE 2205A), Software Design for Systems Engineering (SE 2251B), Applied Probability and Statistics for Engineers (STATS 2141A), Better Communication Bridges (WRITING 2130G), Data Engineering and Machine Learning (AISE 3010B), Database Management Systems (AISE 3309A), Cyber-Physical Systems Theory (AISE 3350A), Digital Systems and Signal Processing (AISE 3351B), Introduction to Machine Learning (DATASCI 3000A), Electric Circuits (ECE 2205A), Introduction to Electrical Instrumentation (MSE 2201A), Introduction to Mechatronic Design (MSE 2202B), Circuits and Systems (MSE 2233B), Finite Element Methods for Mechatronic Systems Engineering (MSE 3360B), Post–World War II Popular Music (MUSIC 2700B), Advanced Applied Mathematics for Electrical Engineering (NMM 3415A)

PROJECTS

Autonomous Scavenger Robot Jan 2025 — Mar 2025
Project Developer | Introduction to Mechatronic Design (Course Project)

- Prototyped an autonomous robot that utilizes sensors (ultrasonic, IR, IMU) to retrieve valuable objects from environments unsafe for human access, applying knowledge in C/C++ and embedded systems.
- Interpreted PCB schematics, component datasheets, and mechanical specifications to generate SolidWorks models and detailed engineering drawings.
- Applied circuit-theory to select passive components, breadboarded key subcircuits, then hand-soldered an ESP32 onto a PCB, yielding a fully functional microcontroller board that passed all electrical tests on first assembly.
- Debugged power rails with a multimeter, oscilloscope, logic analyzer, and function generator; created a checklist that reduced troubleshooting time by 30%.
- Delivered weekly PowerPoint updates in Teams, maintained detailed Word/Excel build logs, and prioritized lab milestones under tight deadlines.

Electric Longboard Feb 2025 — Mar 2025
Remote Controller (RC) Developer | Western Engineering Electrium Mobility (Club)

- Designed and prototyped a universal, wireless remote for electric longboards by integrating an Arduino micro-controller with an radio-frequency transceiver to enable low-latency communication while maintaining form factor.
- Modeled and 3D-printed an ergonomic casing in SolidWorks, ensuring secure fit for internal components, accessible wiring for assembly, and practical one-handed operation.
- Delivered a functional prototype aligned with real-world usability and modular design principles, laying the foundation for future remote control systems for the club.

AI Music Composer Sept 2024 — Mar 2025
Student Innovation Project Director | Western Cyber Society (Club)

- Developed a generative AI model in Python to compose original music using machine learning techniques; applied data preprocessing, neural networks, and model evaluation strategies with TensorFlow and NumPy.
- Directed a 9-member team, managing development timelines through Git version control, structured task allocation, and weekly progress reviews to achieve a high-quality result.

- Composed a technical report and delivered a presentation at a conference summarizing architecture, dataset design, and results; translated complex AI concepts for both technical and non-technical audiences using Microsoft Word and PowerPoint.

Predictive Analytics for Hospital Readmission Risk Sept 2024 — Dec 2024
Project Developer | AISE 3010 Data Engineering and Machine Learning (Course Project)

- Built a machine learning model to predict 30-day hospital readmission using a healthcare dataset with 12,000+ records, combining and cleaning data from multiple tables using SQL in BigQuery.
- Trained and tested models using TensorFlow and AutoML on Google Cloud Platform, reaching 87% precision and 82% recall — a 15% improvement over baseline methods.
- Used built-in tools on Vertex AI to fine-tune model settings, improving accuracy and reducing training time by over 20%.
- Summarized the full process in a written report with visuals and results, clearly explaining the workflow from data preparation to model evaluation.

Mainframe Student Center Feb 2024 — Apr 2024
z/OS Developer | Western Cyber Society (Club)

- Utilized organizational skills to set weekly meetings for a team of eight to recreate Western University's Student Center on an IBM mainframe within a month.
- Stored and accessed student information on an IBM mainframe through an Ubuntu-based LinuxONE server, successfully meeting project requirements and showcasing mainframe proficiency.
- Applied Linux administration techniques — such as setting user permissions, managing processes, configuring network settings, and automating tasks with shell scripts — to optimize the server's performance and ensure secure operation.
- Applied SQL and database management techniques - such as query optimization and normalization - to manage and retrieve over 10,000 student records, ensuring 100% data consistency.
- Utilized written communication skills to design a presentation board that highlighted key aspects of the project, earning positive feedback from over 50 industry professionals at the 2024 Toronto Tech Expo.

Smart Meal Planner Jan 2024 — Apr 2024
Project Developer | SE 2251 Software Design for Systems Engineering (Course Project)

- Developed a personalized meal recommendation system that suggests whether to eat in or out based on user nutrition goals, time constraints, and real-time calendar and location data.
- Integrated the OpenAI GPT-3.5 API to generate natural language restaurant suggestions tailored to user diet profiles and upcoming events, improving contextual accuracy and user engagement.
- Engineered backend workflows combining data from Google Maps (Directions, Places, Geocoding), Google Calendar, and Spoonacular API to dynamically recommend meals and routes.
- Containerized the full application using Docker, enabling consistent deployment and seamless local or cloud execution.

Spotify Playlist Generator Oct 2023 — Apr 2024
Student Innovation Project Developer | Western Cyber Society (Club)

- Collaborated with a team of six developers, building the front-end in ReactJS and back-end logic in Python, to create an artificial intelligence model that can generate Spotify playlists.
- Researched and employed the use of APIs to offer more features and enhance the model's speed, successfully generating more personalized playlists in under three seconds per request.
- Demonstrated critical thinking by proposing new goals and restructuring code when faced with design challenges, resulting in an application that won first place out of 20+ groups in the Entertainment category of the 2024 Toronto Tech Expo.

Inhaler Counter Jan 2023 — Apr 2023
Product Developer | ES1050 Foundations of Engineering Practice (Course Project)

- Developed an inhaler counter using C++, an Arduino micro-controller and actuators to improve accessibility for patients with visual or auditory impairments.
- Designed a high-fidelity prototype and draft technical drawings of the inhaler counter's layout using CAD software, ensuring compatibility across both mechanical and electrical components.
- Assembled the final prototype using 3D-printed custom parts, achieving a functional model that earned "Most Popular Project" among 700+ entries at a design competition.
- Designed a high-fidelity prototype in SolidWorks and 3D-printed custom parts to build the final inhaler counter, achieving a functional model that earned "Most Popular Project" among 150+ entries at a design competition.

- Utilized written communication skills to develop a comprehensive report tailored for non-technical clients, ensuring a clear understanding of the project's goals, implementation, and evaluation.

WORK EXPERIENCE

Guest Service Server May 2024 — Present
The Rec Room

- Serving up to 10+ tables at once through effective time management, reducing wait times and ensuring timely service.
- Utilizing problem-solving skills to resolve on-the-spot customer issues, resulting in high guest satisfaction.
- Demonstrating flexibility by covering other service roles as needed, ensuring smooth operations during peak hours and improving team productivity.

TECHNICAL SKILLS

Languages:	Python, Java, JavaScript, C/C++, Bash, SQL, Git, Docker, React.js, HTML, CSS, TypeScript, Jupyter Notebook, COBOL, Google Cloud API Suite
Software:	pytest, PyTorch, AutoCAD, SolidWorks [Associate (CSWA) & Simulation (CSWA-S) Certifications], MATLAB, MySQL, Git, Microsoft Office (Word, Powerpoint, Excel), Google Cloud Platform
AI/ML:	TensorFlow, Scikit-learn, OpenAI API, Pandas, NumPy, Neural Networks, Computer Vision, Model Evaluation, Data Preprocessing
Hardware:	Intermediate in Arduino, ESP-32, Basic FDM 3D Printing, Basic Machining, Proficient in Soldering, and Raspberry Pi