Isaac Doyle

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EDUCATION

McMaster University   Hamilton, ON
Bachelor of Engineering in Software Engineering   *Expected Grad: 2028*
- Data Structures and Algorithms, Embedded Systems, Digital Logic Design, Object-Oriented Programming, Systems Programming (C)

PROJECTS

MindTrace | *HTML, JavaScript, CSS, MongoDB, Node.js + Express, JWT auth*   January 2026
- Designed and deployed a full-stack mental health tracking web application with secure user authentication and persistent logging of **4+** daily wellness metrics (mood, energy, stress, sleep)
- Implemented **JWT-based authentication** and password hashing (bcryptjs), securing user sessions and protecting sensitive data
- Modeled and managed user data using **MongoDB + Mongoose**, supporting CRUD operations for daily entries and historical trend tracking
- Built RESTful API endpoints with **Express.js**, enabling seamless client-server communication and handling dozens of requests per user session
- Developed a responsive frontend using **HTML, CSS,** and **JavaScript** allowing users to visualize trends and interact with their data across devices

Leaf-Watch | *React, JavaScript, Leaflet, Python, scikit-learn, Pandas, NumPy*   November 2025
- Developed a full-stack web platform that visualizes global deforestation trends using an interactive Leaflet map rendering geospatial data layers in real time
- Trained and evaluated **scikit-learn ML models** on historical land-use and climate datasets to predict deforestation risk, processing **1000+** environmental data points
- Integrated a Python ML backend with a React frontend via **REST APIs**, enabling dynamic visualization of prediction results and environmental impact metrics
- Engineered data preprocessing pipelines using **Pandas** and **NumPy** to clean and structure multi-source datasets for model training and analysis

ATMS | *C++, Python, Arduino, PlatformIO, Linux, Matplotlib*   July 2025
- Engineered a real-time thermal control system in **C++** using PID algorithms to dynamically regulate CPU/GPU temperatures under fluctuating load conditions
- Collected sensor data via Arduino + thermistors and controlled fan speeds using PWM, achieving a **22%** reduction in thermal variance
- Automated data logging and analysis in **Python**, processing **100+** temperature samples per test session for performance evaluation
- Visualized system performance using **Matplotlib**, enabling optimization of control parameters and cooling efficiency

RF Diagnostics Tool | *C, C++, Arduino, PlatformIO*   May 2025
- Designed and programmed a wireless RF diagnostics device using an **ESP32** and NRF24L01+PA+LNA module operating in the 2.4GHz ISM band
- Developed firmware in **C/C++** to monitor signal strength, packet loss, and interference patterns in real time

TECHNICAL SKILLS

Languages: Python, Java, C, C++, Bash, JavaScript
Frontend: React, HTML, CSS, Leaflet
Backend: Node.js, Express, REST APIs, JWT Authentication
Databases: MongoDB
Hardware/Embedded: ESP32, Arduino, NRF24L01, Ultrasonic Sensors, Thermistors, PWM Control
Tools: Linux, Git, GitHub, PlatformIO
Libraries: Pandas, NumPy, Matplotlib, Scikit-learn