

Tim MacDonald

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EDUCATION

Seneca Polytechnic

Toronto, ON

AdvDipl. Computer Engineering Technology, GPA: 3.20/4.00

2018 – 2024

CERTIFICATIONS

AWS Certified Developer | [Credentials](#)

- Validates expertise in developing, deploying, and debugging cloud-based applications using AWS SDKs and core services. Focuses on serverless architecture, CI/CD automation, IAM security, and application lifecycle management on AWS.

EXPERIENCE & PROJECTS

SmartSpot - Smart Parking System

- Developed a smart parking solution offering paid membership-based access to guarantee parking in high-demand areas, reducing **search time by over 60%**.
- Integrated a Raspberry Pi controller running Python to manage 5+ sensors and RFID modules for secure authentication and occupancy tracking.
- Hosted an HTTP web server supporting real-time monitoring and system control for **up to 50 concurrent users**.
- Implemented an LCD interface, LED indicators, and surveillance camera, **improving user feedback accuracy by 85%** and ensuring continuous visual security.

Cloud Software Developer - Portfolio Project

- Developed a fully serverless web portfolio leveraging AWS Lambda, API Gateway, and DynamoDB with near-zero operational overhead.
- Defined Infrastructure as **Code (IaC)** using the **AWS Serverless Application Model (SAM)**, enabling automated reproducible deployments in **under 2 minutes**.
- Built Lambda-based REST APIs in Python for visitor analytics tracking, ensuring efficient, scalable, and low-latency data processing.
- Implemented unit testing and **CI/CD automation** with GitHub Actions, ensuring error-free deployments across all environments.
- Configured CloudFront and **Route 53** for secure HTTPS delivery and global caching, improving page load **speed by 45%**.

RouteEase - Bus Reservation

- Developed a Java web application managing real-time bus schedules and reservations, leveraging **Servlets, JSPX**, and SQL for dynamic content and reliable database operations.
- Implemented DAO and DAO Factory design patterns, reducing **SQL redundancy by 70%** and improving maintainability.
- Generated dynamic JSP pages with Expression Language (EL) for responsive ticket booking, decreasing page **load times by 30%**.

PiGuard - IoT Security System

- Engineered an IoT-based intrusion detection platform integrating 4+ microcontrollers and networked sensors for real-time perimeter monitoring.
- Implemented MQTT communication to broadcast instant alerts (**<200 ms latency**) across multiple security nodes.
- Developed Python clients using Paho.MQTT to enable bi-directional communication, **achieving 99%** message delivery reliability in distributed environments.
- Optimized system reliability and scalability through event-driven message handling and lightweight network design.

TECHNICAL SKILLS

Languages: Java, Python, C/C++, C#, SQL, DynamoDB, JavaScript, HTML/XML, CSS

Frameworks: React, Node.js, Flask, JUnit, FastAPI, Paho.MQTT, Django

Developer Tools: UNIX/Linux, Git, Docker, AWS Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Power BI, Eclipse, Boto3

Libraries: Pandas, NumPy, Matplotlib