Charles Reed

CharlesReed2003@gmail.com | (647)-639-8141
Toronto, Canada | **Dual Citizen (USA, Canada)**
GitHub | LinkedIn

Education

York University Toronto, Canada
Honours Bachelor in Computer Science ***3.7/4.0 GPA*** *Sept 2021 - Apr 2026 (Expected)*

Professional Experience

York Region ***Vaughan, Canada | June 2024 - Present***
Software Engineer Intern

- *Development Environment: Arduino IDE, PlatformIO, VS Code, Git, GitHub, Azure IoT Hub, Windows*
- Collaborated with a team of electrical engineers to develop an **automated** irrigation and nutrient delivery system, contributing to the **software design** and **optimization**, which improved data collection accuracy by **30%** and reduced processing time by **20%**
- **Designed, built, and optimized** compost systems at **5 community gardens**, ensuring consistent compost production and diverting **25%** of organic waste from landfills
- **Integrated Azure IoT Hub** to stream live sensor data into an **Azure SQL database** for real-time logging, trend analysis, and predictive insights for automated irrigation control

Freelance Software Engineer ***Toronto, Canada | 2020 - Present***

- Real Estate Forecasting Tool: *Jan 2024 - June 2024*
  - Designed and implemented a **CRON job** using **Python, FastAPI**, and **SQLAlchemy** to scrape **MLS data** and sends the results to an **Azure SQL Database** for further analysis.
  - Employed a **cloud-native approach** with **Azure SDK** and an **Azure Function** to trigger and spin up an **Azure Container Instance** running the analysis engine containerized in **Docker**.
  - Developed an automated system for data collection, analysis, and visualization, resulting in a **25% increase** in forecasting accuracy and reducing analysis time by **30%**, while integrating the **OpenAI API** to generate market trends, ROI predictions, and neighborhood evaluations.
  - Built an interactive frontend dashboard using **React.js, Tailwind CSS**, hosted on **DigitalOcean**, enabling non-technical users to easily visualize and interact with real-time insights.
- Pallet Mass Tracker (Import Export Company): *Dec 2022 - Mar 2023* Github Link
  - *Development Environment: Java, Git, GitHub, Android Studio, Android Phone Emulators, Windows*
  - Mobile app enabling **real-time data collection and analysis** from a **Bluetooth** GS1 barcode scanner, displaying a running total of the number of packages scanned and their weight in kilograms.
  - Implemented an **algorithm** to neatly format and align decimal values, converting them into centered strings with padded white spaces and removing redundant ".0" decimals or trailing zeros for better **readability**.
  - Designed a **user-friendly interface** with intuitive button layouts and universally recognized icons, allowing effortless navigation and eliminating language barriers.
  - **Enhanced efficiency** by implementing **advanced event listeners and timers**, adding logic for input length verification and format validation to ensure accurate processing of scanner data, and using linked lists to enable constant-time updates and modifications to the dataset.

Technical Skills

- **Programming Languages:** Python, Java, C#, C, C++, TypeScript, JavaScript, Go, SQL, Bash/Shell, Flutter, Kotlin, Swift, Prolog
- **Cloud & DevOps:** Azure (Functions, ACI, ACR, SQL Database, IoT Hub), AWS, DigitalOcean, Docker, Kubernetes, Jenkins, CI/CD pipelines, Git, GitHub, GitLab, Oracle VirtualBox
- **Software Development & Frameworks:** FastAPI, Flask, Spring Boot, Hibernate, .NET Core, React.js, Next.js, Express.js, Node.js, Tailwind CSS, BeautifulSoup, win32
- **AI & Data Science:** PyTorch, TensorFlow, Keras, SciKit-learn, NumPy, OpenCV, Mediapipe, GPT/AI Integration
- **Databases:** MySQL, PostgreSQL, MongoDB, SQLite, Redis

Personal Projects

- **Dynamic Process Memory Analyzer** Github Link *2024*
  A multifaceted tool for analyzing and modifying live memory in running programs. It could help with debugging, reverse engineering, game modifications, performance tuning, and security testing. With features like multi-threading, flexible data handling, and direct memory access, it streamlines troubleshooting, helps locate vulnerabilities, and enables custom automation.
  Development Environment: C++, Git, GitHub, Visual Studio Code, Windows
  - Designed a **modular** and **scalable** system using **object-oriented programming (OOP)**, enabling dynamic user input handling, **multi-threaded** workflows, and efficient low-level memory interactions.
  - Developed advanced memory analysis features, including **memory region querying**, precise **address scanning**, and controlled **memory manipulation**, enhancing debugging and optimization capabilities.
  - Implemented robust **type handling** for floats and doubles, reducing precision errors, and created an intuitive **user interface (UI)** for streamlined control and interaction.
  - Designed **unit tests** using a dummy process that stores values in the **stack** and **heap**, allowing the main application to **scan, verify, and modify memory regions**, ensuring reliability and accuracy.