

Matthew J. Barichello

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LEAD SOFTWARE ENGINEER

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Experience

March 2022	- December 2023	NowSecure (Lead Software Engineer) , <i>Chicago</i> <ul style="list-style-type: none">• Built out and lead a dedicated NowSecure Platform infrastructure development team• Developed and deployed new backward-compatible virtual device security testing frameworks in a kubernetes-native environment• Built out infrastructure monitoring and reporting frameworks using DataDog and active service instrumentation• Developed architectural design documents, modernization plans and standards guidelines
August 2021	- March 2022	Ford (Fullstack Software Engineer) , <i>Dearborn, Michigan</i> <ul style="list-style-type: none">• Developed and deployed enterprise-grade vehicle insights SaaS products, backed by Big Data solutions
March 2020	- February 2021	Sensibill Inc. (Security Champion) , <i>Toronto, Ontario</i> <ul style="list-style-type: none">• Introduced proactive security standards for engineering teams• Deployed new CI-coupled security infrastructure for source and dependency vulnerability detection and quality gating• Deployed new active infrastructure monitoring utilities for behavioural anomaly detection, resource load monitoring and real-time attack detection Sensibill Inc. (Data & AI Researcher) , <i>Toronto, Ontario</i> <ul style="list-style-type: none">• Built out bleeding edge heuristic data extraction models in Typescript and Python that powered the development and release of multiple new Extraction-as-a-Service (EXaaS) products• Created real-time data segmentation prototypes based on graph clustering to select the appropriate model(s) for optimal data extraction• Created and maintained data annotation tooling• Handled production model deployments
December 2019	- March 2020	Sensibill Inc. (Backend Engineer) , <i>Toronto, Ontario</i> <ul style="list-style-type: none">• Developed a set of scalable RESTful microservices in Golang and Java, backed by a scalable asynchronous message query platform• Created and provisioned cloud architecture using IaC on AWS• Managed a private CI and CD platform using IaC on AWS
May 2019	- March 2020	Optimotive Technologies (Contractor) , <i>Windsor, Ontario</i> <ul style="list-style-type: none">• Contractor for electrical design and software development
March 2019	- March 2020	No Generics Ltd. (CEO) , <i>Belle River, Ontario</i> <ul style="list-style-type: none">• Scalable cloud virtualization with a 10Gbe intranet back-plane for high-throughput storage access• Game server hosting with segregated virtualization containers and isolated networking• Software development and electrical design contractor
February 2018	- June 2019	Programming and Computer Science Tutoring , <i>Assumption College High School</i> <ul style="list-style-type: none">• Private online Java programming tutoring during weekdays after school• In-class Java programming and computer science conceptual tutoring
September 2015	- June 2017	Programming and Electrical Design Mentor , <i>Assumption Robotics Club</i> <ul style="list-style-type: none">• Taught and mentored Java and C programming as well as circuit design and implementation in robotics

Languages & Frameworks

Cloud Platforms	AWS; Azure; DigitalOcean; OVH; LunaNode
Cloud Frameworks	PrismaCloud; SonarQube; Instana; DataDog
Big Data	Apache Hadoop; Apache Spark; Grafana
CI/CD & Automation	Kubernetes; GitLab; GitHub Actions; CircleCI; Jenkins; sr.ht
IaC	HCL Terraform; Chef; AWS CDK
Languages	C++; C; Go; Java; Kotlin; Groovy; TypeScript; JavaScript; Bash; m4; TEX ; Rust; Python; Lua; Pascal
Operating Systems	Windows; macOS; Linux (Debian & derivatives; Red Hat & derivatives; Arch)
Frameworks	OpenCL; OpenGL; Apache Commons; Processing; JNI; Coreutils; KVM; QEMU; LUKS; Systemd; Init; Cron; iproute2; iptables; docker
Build Tools	Gradle; Maven; Ant; CMake; GNU/Make; Autotools; Waf

Education

August 2019	Quantum Cryptography School for Young Students <i>University of Waterloo</i>
September 2015 - July 2019	Ontario Secondary School Diploma <i>Assumption College High School</i>
	International Baccalaureate Certificate <i>Assumption College High School</i>
July 2015	DMA Certificate for Advanced Java Programming <i>University of Toronto</i>

Projects

February 2019 - present	CX - C++, CMake <ul style="list-style-type: none">A header-only, stl and libc independent, C++20 concepts, template meta-function and runtime utility library. Features include advanced compile-time traits, zero-allocation generic runtime closures, deferral and error handling mechanisms, and much more.
January 2019 - present	fake-jni - C, C++, CMake, JNI, JVMTI <ul style="list-style-type: none">A JNI and JVMTI instrumentation and interposition framework. Features include platform agnosticism, JNI-header agnosticism, a high-level JNI and JVMTI interposition API, seamless native class and function definitions, advanced JNI and JVMTI API boundary profiling and much more.
September 2019 - present	baron - C, C++, CMake, JNI, JVMTI <ul style="list-style-type: none">A reverse engineering framework built on top of fake-jni designed to be a mostly automatic black-box JNI module and JVMTI agent runtime disassembler.
December 2021 - present	constemu - C++, CMake <ul style="list-style-type: none">A constant-expression compatible NMOS6502 microprocessor emulator, including special cases for invalid instructions and special behaviours of later reproduction runs.
January 2020 - January 2020	go-figure (<i>Sensibill</i>) - Golang <ul style="list-style-type: none">A runtime micro-service configuration bus designed to allow for zero-downtime configuration changes in critical and production environments. Supports both synchronous and asynchronous configuration busses.
	go-locals (<i>Sensibill</i>) - Golang <ul style="list-style-type: none">A goroutine identification and threadlocal library.
	roam (<i>Sensibill</i>) - Golang <ul style="list-style-type: none">A much faster alternative Golang static reflection runtime. Addresses issues in the default Golang reflection runtime that causes reflective access operations to take several orders of magnitude longer than they should.
	gomains (<i>Sensibill</i>) - Golang <ul style="list-style-type: none">A lightweight and fast runtime struct serialization and deserialization framework, built on roam.

Competitions

March 22-23, 2019	Massey Hacks V
February 1, 2019	Woburn Challenge Online Round 3
December 14, 2018	Woburn Challenge Online Round 2
December 7, 2018	15th Windsor Regional Secondary School Programming Competition
November 16, 2018	Woburn Challenge Online Round 1
September 14-16, 2018	Hack the North 2018
April 28-29, 2018	Massey Hacks IV
April 1-2, 2017	Massey Hacks III
May 21-22, 2016	Massey Hacks II

Awards

2022	Value Creation Award, Craftsmanship, <i>NowSecure</i>
2018	First Place Programming Team Award, <i>University of Windsor</i>
2018	First Place Hacker, <i>Massey Hacks IV</i>
2018	Best Hardware Hack, <i>Massey Hacks IV</i>
2016 - 2019	Honour Roll, <i>Assumption College High School</i>