Daniel Thero

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**SKILLS**

**Languages:** C++, C, Java, Python, Typescript, JavaScript, HTML/CSS, Verilog, VHDL

**Tools/frameworks:** React, Bootstrap, Django, PostgreSQL, Flask, GTest, Jenkins

**Other:** Git, Linux, Jira, QNX, Jinja, ARM, Arduino, ELK stack

**EXPERIENCE**

**Cyber Operations Specialist** – Department of National Defense *Gatineau QC (PT, Jan 2023 – Apr 2023)*

* Employed an **ELK stack** with custom **Grok** patterns and a **JSON output plugin** to aggregate and parse activity logs from multiple aircraft systems for analysis, visualization, and troubleshooting.
* Configured the **Logstash** pipeline to store data with **Elasticsearch** and view it with **Kibana**

**Software Engineer (RTOS)** – Huawei Technologies *Kanata ON (May 2022 – Aug 2022)*

* Researched and developed optimizations for **HarmonyOS 4.0 microkernel**, a Unix-like real-time OS, using a **Git workflow** and **Python scripting** on **Yocto Linux**, emulated on **QEMU**
* Designed a **C++** performance test to measure isolated **RPC calls** with **nanosecond-accuracy**
* Implemented an **RB-tree** for **thread-queueing** to drastically reduce **futex** wait times
* Independently patched a vulnerability in file creation by **caching** authorization info upon each **kernel call**
* Stress-tested scheduling and load-balancing in **mixed-criticality embedded systems** on **Raspberry Pi**

**Embedded Software Developer** – Ford Motor Company *Kanata ON (Sep 2021 – Dec 2021)*

* Developed **C++** **production code** for 2022 Ford vehicles,including **debug commands** on **QNX Momentics** with **unit tests** using **GoogleTest**, deployed onto test hardware by **automotive ethernet**
* Implemented functionality to improve the reception of **NFC** (near-field communication) pings
* Practiced **Agile methodology** using a **Git workflow** and **Jira** for issue tracking in a **Nexus** repository

**Open-Source Developer** – University of Waterloo *Kitchener ON (Jan 2021 – Apr 2021)*

* Contributor for **Apache Drill SQL query engine** using **Bash:** improved code quality, installed **SSL certificates**
* Tested **Java** project changes using **Maven** build automation software with **POM XML** files
* Collaborated on **Django** websites for dataset reporting using **Postgres**, visualized with **Jinja** templates

**PROJECTS**

**Real-Time Operating System (C, ARM)** - Designed and created **real-time executive (RTX)** elements from scratch, including **dynamic memory management**, **multiprocessing**, **task scheduling**, and **I/O**

**Traveling Salesman Neural Network (Python)** – Finds near-ideal routes with the MIT licensed **self-organizing map**

**[Web Portfolio](https://www.danielthero.com) (Typescript, React.js, Material UI)** – Developed a responsive web-app hosted with **AWS Amplify**

**Systolic Matrix Multiplier (Verilog, Vivado)** – Made for **PYNQ FPGA** hardware that ships with **Python APIs**

**EDUCATION**

**University of Waterloo** – 4th Year Computer Engineering, Honours (2019 - Present)