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, Docker, QNX, ELK Stack, Jinja, ARM, Arduino

EXPERIENCE

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

- Employed an **ELK stack** on **Docker** 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 (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)