RYAN DULLAERT

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SKILLS

- Languages: C++, Python, SQL, Bash
- Technologies: Git, Numpy, OpenCV, SQLite, QNX RTOS, Linux, Google Test, Eigen, TinyXML-2

EXPERIENCE

Ford Motor Company of Canada – C++, SQL Jan. 2021 – Apr. 2021

Software Developer Co-op – Waterloo, ON

- Developed features for the voice services libraries running on **QNX RTOS** in automotive embedded devices
- Added synonym support to radio stations to allow tuning by name from synonym database with **SQLite**
- Mapped names to radio station frequency to correctly interpret intent through voice recognition system
- Automated update of radio stations' synonyms with **SQLite** when available radio station list changes

Ford Motor Company of Canada – C++, SQL, Bash May 2020 – Aug. 2020

Embedded Developer Co-op – Waterloo, ON

- Enhanced logging events to allow developers to debug software running on **QNX RTOS** in existing vehicles
- Automated upload of incomplete event metadata from **SQLite** to improve error handling of interrupted events
- Implemented a service locator pattern to enable support for mock methods in 72 unit tests in **Google Test**
- Validated the accuracy of regex scrubbing by creating unit tests with **Bash** scripts to comply with privacy laws

Christie Digital Systems – C++ Sept. 2019 – Dec. 2019

Software Engineering Co-op – Kitchener, ON

- Developed an automatic correction algorithm to normalize colour of projected content on rough surfaces
- Gathered accurate colour data from non-uniform screens by identifying relevant projector pixels with **OpenCV**
- Implemented a matrix solver with the **Eigen** library to generate independent RGB corrections for every pixel
- Created additional unit tests for new and existing code with **Google Test** to minimize regressions

PROJECTS

Waterloo Aerial Robotics Group – Python

Computer Vision Subteam – Waterloo, ON

- Developed producer-consumer module with **Numpy** to map identified image pixels to geographical coordinates
- Implemented multiprocessing support to increase module performance at a 1:1 ratio with processor cores
- Generated projective perspective transformation matrices from plane telemetry for pixel-to-coordinate map

XML Game Data Editor – C++

- Developed a **C++** program to allow customization of game data files in a user-friendly environment
- Imported XML data recursively into tree data structures with the **TinyXML-2** library to store in-game events
- Provided verification for user-created events by traversing event trees to model their interactive stories

EDUCATION

University of Waterloo Sept. 2018 – Apr. 2023 (expected)

Candidate for B.A.Sc. in Computer Engineering

- Relevant courses: Systems Programming & Concurrency, Real-Time OS, Compilers, Computer Networks