David Gurevich

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Technical Skills

- **Languages**: Python, C++, C, Rust, MATLAB, SQL, Shell scripting
- **Libraries**: NumPy, SciPy, Pandas, Matplotlib, Flask, OpenCV, FFTW, CTypes
- **Tools/Environments**: Git, Vim, JetBrains IDEs, gdb, Docker, CMake, Buildroot

Experience

Microchip Technologies, Inc — Toronto, ON
Software Engineering Intern — *September 2022 - December 2022*

- Working with C and C++ to develop SmartHLS high-level synthesis solution for FPGA programming

Applied Mind, Inc — Ottawa, ON
Software Development Intern — *January 2022 - April 2022*

- Designed and implemented high-speed data streaming application for embedded system in Rust within soft real-time performance constraints
- Implemented sensor fusion algorithms (TDOA, Kalman filter) in Python to eliminate error in RF emitter location estimates by 75%
- Performed literature review to determine and implement state of the art of signal emitter localization methods

Applied Mind, Inc — Ottawa, ON
Embedded Software Development Intern — *May 2021 - August 2021*

- Developed multithreaded radio signal acquisition software in Rust to receive and process LTE signals at over 60 MS/s
- Made use of DMA and CPU caching in order to transfer received data from FPGA to processor at over 1 GB/s
- Designed and deployed custom Continuous Integration workflow for embedded software using GitHub Actions
- Implemented Linux userspace drivers in Rust and C for radios and high-performance clocks

York University — Toronto, ON
Research Assistant — *January 2019 - August 2019*

- Conducted original epidemiological research to design an ODE model to simulate the dynamics of a virus outbreak in secondary schools, with implementation in MATLAB and C++

Projects

Radar-based Drone Identification: Novel machine learning based approach to the identification of drones from radar signals
Python (NumPy, Matplotlib, SciPy, TensorFlow)

- Developed a novel approach to the identification of drone types from noisy radar signals
- Approach won second place in competition organized by CANSOFCOM, DRDC, and Hack The North
- Utilized TensorFlow to fit a Convolution Neural Network classification model based on state of the art research

3D Sound Synthesis: Localize audio to a particular location around the listener
C++ (STL, FFTW, CMake), MATLAB

- Designed a custom algorithm for 3D sound synthesis, given a position on the unit sphere using various DSP methods
- Prototyped in MATLAB, with final implementation in C++

Cross-correlation fluid flow meter: Low-cost signal acquisition and processing system for ultrasonic fluid flow measurement
Python (NumPy, Matplotlib, SciPy), C++, MATLAB

- Developed high throughput, multi-threaded Python application for acquisition and processing of high frequency analog signals within strict operational requirements
- Collaborated on and prototyped custom signal processing algorithms in MATLAB, with implementation in C++

Education

University of Waterloo — Waterloo, ON
Candidate for Bachelor of Mathematics, Computer Science — *Expected Graduation: April 2025*