David Gurevich

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Technical Skills

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

Experience

Research in Flows, Inc Brampton, ON
Software Engineer *February 2018 - September 2020*

- **Research and Development**: Responsible for the ground-up architecture and development of a low-cost digital phase demodulation system for high frequency signal analysis in industrial applications
- **High Performance**: Developed a high-throughput, multi-threaded Python application for acquisition and processing of high frequency analog signals within strict operational requirements
- **Digital Signal Processing**: Collaborated on and prototyped custom digital signal processing algorithms in MATLAB with final implementation in C++
- **Low-Cost Design**: Worked within strict budget requirements to source OEM hardware that is cheaper than competition, but delivers improved results

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

- **Mathematical Research**: Conducted original epidemiological research to design an ODE model to simulate the dynamics of a measles outbreak in secondary schools, with implementation in MATLAB
- **Computational Model**: Designed and implemented an Agent-Based Model alternative to the ODE model in C++ with improved accuracy and realism
- **Software Optimization**: Implemented certain improvements in C++17 software (multi-threading, data structure optimization) to improve execution time by a factor of over 17,000, saving days of compute time
- **Conference Planning**: Supported the planning of the 2019 Annual Society for Mathematical Biology meeting. Developed Python and Shell scripts to automate repetitive tasks

Projects

- **3D Sound Synthesis**: Make any sound appear as though it is coming from somewhere else
  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 memory efficient implementation in well documented C++ code
  - Performed an extensive literature survey to determine the state-of-the-art in 3D sound synthesis
- **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
  - Collaborated with engineers and researchers at CANSOFCOM and Defence Research and Development Canada
  - Utilized TensorFlow to fit a Convolution Neural Network classification model based on state of the art research

Education

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

GPA: 3.90/4.00