David Gurevich

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Skills

- **Languages**: Python, C++, C, MATLAB, Shell scripting, HTML/CSS **Development**: Git, Linux
- **Libraries**: NumPy, SciPy, Pandas, Matplotlib, Flask, C++ Standard Library (STL)

Experience

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

- **Measles Research**: Conducted epidemiological research to model the dynamics of measles in secondary schools
  - Implemented a deterministic ordinary differential equation model that models the population compartmentalization of students in secondary schools during a measles outbreak (MATLAB, Python)
  - Designed and developed an Agent-Based Model (ABM) alternative to the ODE model with improved accuracy and realism. Improved execution time by a factor of over 17,000 (C++17, Python)
  - Documented findings in an epidemiological report co-authored by supervisor
- **Typesetting**: Typeset course notes for supervisor using LaTeX
- **SMB Conference**: Helped plan 2019 Annual Society for Mathematical Biology meeting
  - Aided in scheduling hundreds of speakers and symposiums in a quick and efficient manner
  - Developed Python and Shell scripts to automate repetitive tasks

Research in Flows, Inc Missisauga, ON
Software Engineer *February 2018 - Present*

- **Research and Development**: Researched cost-effective solutions for PC based data acquisition (DAQ) and arbitrary signal generation
- **Exceptional Performance**: Developed a high-throughput, multi-threaded C++ application for acquisition and processing of ultrasonic signals within strict operational requirements
- **Web Interface**: Used Python and Flask to design an easy-to-use web interface that allows users to specify and send an ultrasonic signal, and then visualize and process the input from the DAQ device
- **Collaboration**: Worked closely with team and supervisor to outline technical limitations and to overcome them

Projects

- **Ultrasonic fluid flow meter**: A soft real-time utility that allows uses to send and receive ultrasonic signals using USB hardware
  Python (NumPy, Scipy, Bokeh, Flask), C++ (STL), CUDA, MATLAB, Windows API
  - Developed application to scan and process data at a rate of 20 mega samples per second (MS/s)
  - Utilized asynchronous scheduling to conduct multiple back-to-back scans with minimal idle time
  - First of its kind user interface for commercial and industrial applications
- **Agent Based Model**: An agent based model for the spread of measles in secondary schools
  C++ (STL), Python (NumPy, Pandas), MATLAB
  - Designed extremely extensible model of agents in a secondary school environment
  - Engineered to process one day (over 15,000 stochastically generated actions) in less than 60 milliseconds, saving days of compute time
- **Y.U.R.I**: Multimedia object detection software powered by deep learning
  Python (NumPy, SciPy, Flask, OpenCV)
  - Lead a team of developers to create a complex compute-intensive application
  - Implemented Mask-RCNN object detection algorithm in an easy-to-use web application
  - Capable of GPU hardware acceleration for even faster object detection
  - Achived 100% as final project in ICS4U Computer Science course

Education

University of Waterloo Waterloo, ON
Bachelor of Mathematics, Computer Science *2020 - Present*

Westmount Collegiate Institute Vaughan, ON
Ontario Secondary School Diploma *2016 - 2020*