

# David Gurevich

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## SKILLS

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

## EXPERIENCE

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### York University

Research Assistant

Toronto, ON

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 [STL], Python)
  - \* Documented findings in an epidemiological report co-authored by supervisor
- **Typesetting:** Typeset course notes for supervisor using  $\text{\LaTeX}$
- **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

Software Engineer

Mississauga, ON

February 2018 - May 2019

- **Research and Development:** Researched cost-effective solutions for PC based data acquisition (DAQ) and arbitrary signal generation
- **Exceptional Performance:** Developed a high-throughput 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

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- **Ultrasonic fluid flow meter:** A soft real-time utility that allows users 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
  - Achieved 100% as final project in ICS4U Computer Science course

## EDUCATION

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### University of Waterloo

Bachelor of Mathematics, Computer Science

Waterloo, ON

2020 - Present

### Westmount Collegiate Institute

Ontario Secondary School Diploma

Vaughan, ON

2016 - 2020