David Gurevich

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Technical Skills

- **Languages**: Python, C++, C, MATLAB, SQL, Shell scripting
- **Libraries**: NumPy, SciPy, Pandas, Matplotlib, Flask, OpenCV, CTypes
- **Tools/Environments**: Git, Vim, JetBrains IDEs, gdb, Make, CMake, Visual Studio, Linux, Windows

Experience

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

- **Measles Research**: Conducted original 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 presentations in a quick and efficient manner
  - Developed Python and Shell scripts to automate repetitive tasks

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

- **Research, Architecture, and Development**: Responsible for the ground-up design and development of digital phase demodulation system for high frequency signals, including purchasing OEM hardware, and production software development
- **Exceptional Performance**: Developed a high-throughput, multi-threaded Python application for acquisition and processing of high frequency analog signals within strict operational requirements
- **Scientific Collaboration**: Collaborated with team of scientists to develop and implement novel digital phase demodulation algorithm
- **Cost-saving Innovation**: Worked within strict budget requirements to create an effective low-cost solution, demonstrated in an ultrasonic flow-measurement application

Projects

- **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 randomly generated actions) in less than 60 milliseconds, saving days of compute time
  - Verified against custom, independently constructed ODE SVEIR model
- **Object detection web app**: Multimedia object detection software powered by deep learning
  Python (NumPy, SciPy, Flask, OpenCV)
  - Lead a team of developers to create a complex compute-intensive service
  - 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
- **Trading Bot**: Python implementation of custom stock trading algorithm that outperforms market by as much as 220%
  Python (NumPy, Pandas, Matplotlib)
  - Investigated and evaluated various technical analysis techniques
  - Designed custom strategy testing framework for easier evaluation
  - Invented mathematical method of predicting scale of stock growth
  - Tested performance of strategy against market growth – performs at or above market levels in almost all cases

Education

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

Relevant courses: Algebra, Calculus, Functional Programming, Algorithm Design and Data Abstraction