Lawson Fulton

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ABOUT: Multidisciplinary computer scientist with over five years combined experience in industry and research. Leveraging skills in machine learning, physical simulation, optimization, geometry processing, and web development to find effective solutions to important problems.

EDUCATION

University of Toronto September 2017 – January 2019
Candidate M.Sc, Computer Science (Research Stream)

University of Waterloo September 2010 – April 2015
B.Math, Honours Computer Science – Co-op (With Distinction)

EXPERIENCE

MESH Inc. - *Geometry Studio and Consultancy* **August 2018 - present**
Student Intern - Computational Design Toronto, ON

- Leading project to develop new algorithms for the design of lattice-based metamaterials for **3D printing** using nonlinear **Quasi-Newton optimization** methods
- Reviewing literature, implementing, and extending **geometry-processing** algorithms in **C++**
- Interfacing with clients to develop and deliver solutions to **computational design** challenges of all kinds

University of Toronto - *Department of Computer Science* **July 2017 - present**
Research Master's Student (Advised by Alec Jacobson and David I.W. Levin) Toronto, ON

- Conducting research on the use of **machine learning** to accelerate **physical simulation**
- Integrating **Tensorflow** models trained in **Python** framework with real-time **C++** applications
- Assisting in the development of a **real-time bio-mechanics** simulator using reduced **FEM**
- Communicating my research results in publications, talks, and posters
- President of the Computer Science Graduate Student Union: Representing students to department, managing other union execs, coordinating events, and workshops to foster student growth

Thesis: Latent-space Dynamics for Reduced Deformable Simulation
Awarded Best Poster - Graphics Interface 2018

Dropbox - *Teams Platform* **August 2015 - April 2017**
Software Engineer San Francisco, CA

- Developed features and experiments for Dropbox Teams within a massive codebase using Dropbox's custom **Python** backend and **Typescript/Coffeescript** with **React/Flux/HTML/CSS** on the front
- Collaborated with PMs and designers to develop new features and growth/conversion experiments
- Ensured the **reliability** of all new features with extensive unit and **selenium** testing
- Owned the functionality and reliability for the groups feature of Dropbox Teams
- Participated in the daily push on-call rotation, ensuring Dropbox keeps running on fresh code every day

Autodesk Research - *Bio/Nano/Programmable Matter Group* — **April 2014 - December 2014**
Software Developer Intern — San Francisco, CA

- Led the design and implementation of a replacement for the deprecated Autodesk 123D plugin for 3D modelling in the browser using **Javascript** and **WebGL**
- Created a **Javascript** webapp for doing **3D/Bio Printing** along with custom slicer
- Designed and implemented a security solution for isolation of arbitrary user-written **Python** code using **Docker** Linux Containers
- Coordinated with external universities and companies to define future research efforts and collaborations

LinkedIn - *Data Analytics Infrastructure Team* — **August 2013 - December 2013**
Software Engineer Intern — Mountain View, CA

- **Reduced request latency by 50%** through research and implementation of bitmap-based columnar **database indexes** within an in-house developed database with **Java**
- Performed extensive analysis and comparisons of different indexing techniques using **R** and **Java**, resulting in accurate predictions of real world performance

Autodesk Research - *High Performance Computing Group* — **January 2013 - May 2013**
Research Software Developer — Shanghai, China

- Improved the design and performance of a **distributed computing platform** prototype, built during previous internship, through collaboration and on-ramping of new Shanghai team members
- Acted as **coordinator** between Toronto and Shanghai teams, and ultimately bringing the project to a higher level of exposure inside the organization by showcasing our work to multiple teams
- Redesigned a serial Python **mathematical optimization** package to run on our distributed platform
- Took on the responsibility of a research sub-project involving the use of **genetic evolutionary algorithms** to explore applications of **design optimization** in the cloud
- Created **documentation** and getting-started guides for developers and users of the platform

University of Waterloo - *Center for Theoretical Neuroscience* — **May 2013 - August 2013**
Research Assistant - Computational Neuroscience Group — Waterloo, ON

Autodesk Research - *High Performance Computing Group* — **April 2012 - August 2012**
Software Developer — Toronto, ON

- Built, and assisted in the design of, a prototype distributed computing platform for running and dynamically scaling massively parallel mathematical optimization algorithms. Made with Python, **Amazon Web Services (EC2, SQS, S3)**, and **Redis**.
- Collaborated with internal and external clients to satisfy their cloud computing needs while improving the cloud-platform prototype
- Implemented and applied distributed optimization algorithms such as Differential Evolution in **Python**

Autodesk Research - *Research Transfer Group* — **April 2011 - August 2011**
Software Developer — Toronto, ON

- Design and implementation of **C++ API** for the Nucleus physics engine
- Created many interactive physics demos using the new API built with **C++, QT**, and **OpenGL**
- Developed a **Python** wrapper for the API using **SWIG** and samples with **PyOpenGL**
- Prepared technical documentation for the Nucleus API along with a getting-started guide

References available upon request