Lawson Fulton

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EDUCATION

University of Waterloo September 2010 – April 2015
Candidate for B.Math, Honours Computer Science 85% Cumulative Average

Nanjing University of Aeronautics and Astronautics September 2012 – December 2012
International Study Exchange, Software Engineering 93% Cumulative Average

WORK EXPERIENCE

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

- Led the design and implementation of a back-end replacement for the deprecated Autodesk 123D plugin used for 3D modelling in the browser. Leveraged Javascript and WebGL to render scenes that were generated on the back-end with Python and Autodesk modelling libraries.
- Co-led a research project for the development 3D bioprinting techniques through collaboration with internal and external scientists. Developed techniques for post-processing slice images using Python.
- Created a Javascript webapp for doing 3D/Bio Printing on Cyborg, our platform for app development.
- 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.
- Developed a system for routing queries in a distributed analytics system using Java and Netty.

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

- Improved the design and performance of distributed computing platform, built during previous internship (See April 2012), 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 too many 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.
- Worked largely autonomously of Toronto-based supervisor.

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

- Improved execution time of a core GPGPU algorithm for the Nengo neural simulator by over 10 times using OpenCL.
- Demonstrated time management skills by participating part-time alongside intensive full-time school work.

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

- Finished the design and implementation of a new, and more programmer-friendly, C++ API for the Nucleus physics engine for computer animation.
- 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.

TECHNICAL SKILLS

- Languages: **Python, Java, C++, Javascript**, **R, HTML/CSS, MATLAB, Scheme**
- Operating Systems: **Windows, Linux, OSX**
- IDE: **Eclipse, PhpStorm, Sublime, Visual Studio, Xcode**
- Revision Control: **Git, Perforce**
- Graphics: **OpenGL**, **Blender, Design Script, Processing, openFrameworks, 3D Printing Tools**
- Amazon Web Services: **Boto, EC2, SQS, S3**
- Various: **Docker, Redis, SQL, OpenCL, SWIG, QT, NumPy**

AWARDS

- Queen Elizabeth II Aiming for the Top Scholarship, for academic excellence, 2010-2014
- President's Scholarship of Distinction Research Award, University of Waterloo, 2013
- President's International Experience Award, University of Waterloo, 2012
- President's Scholarship of Distinction, University of Waterloo, 2010
- School Champion, Euclid Math Contest, E.L. Crossley Secondary School, 2010
- DSBN Gold Medallion Scholar Award, District School board of Niagara, 2010
- Town of Pelham Scholarship for academic achievement, Town of Pelham, 2010
- Brock Programming Contest Champion, Brock University, 2010

INTERESTS

- Climbing, Cryptocurrencies, Synthetic Bio, Creative Coding, Optimization, Graphics, 3D Printing