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 Python backend-based replacement for the deprecated Autodesk 123D plugin used for computer graphics solid modelling in the browser. Leveraged Javascript and WebGL to render interactive scenes that were generated on the back-end.
- Currently researching and replicating bioprinting techniques for tissue-engineering with SLA and DLP 3D printers.
- Redesigned and refactored a Javascript webapp for doing 3D Printing on the Cyborg platform.
- Now developing and implementing a security solution for isolation of arbitrary user-written code using Linux Containers (OpenVZ).
- Coordinating 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 index.
- 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

- Facilitated collaboration with the Toronto team via project coordination in Shanghai, leading to rapid improvement of a prototype cloud-platform and ultimately bringing the project to a higher level of exposure inside the organization.
- Redesigned a single-threaded mathematical optimization system written in Python to run on a distributed and scalable cloud-platform. (See previous Autodesk job for details)
- 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 cloud-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

- Created a prototype Python-based scalable distributed system for on-demand computing services using Amazon Web Services infrastructure (EC2, SQS, S3) along with a Java frontend, all while assisting design the overall architecture.
- 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.
- Created many real-time physics API samples using 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: **OSX, Linux, Windows**
- IDE: **Eclipse, PhpStorm, Sublime, Visual Studio, Xcode**
- Revision Control: **Git, Perforce**
- Graphics: **OpenGL**, **Blender, Design Script, 3D Printing Tools**
- Amazon Web Services: **Boto, EC2, SQS, S3**
- Various: **OpenCL, SWIG, QT, NumPy, OpenVZ**

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

- Rock Climbing, Biology/Evolution, Creative Coding, Optimization, Graphics, 3D Printing