Mark Christopher Jeffrey

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Skills

Languages	`C`, `C++`, Python, Java, bash, SQL, Matlab.
OS	Linux, Mac OS X, some Windows and .NET.
Libraries	`C++11` STL, boost, pthreads, googletest, matplotlib, Guava, dropwizard, jdbi, CUDA.
Tools	git, Vagrant, Intel pin, Jenkins, valgrind, jvisualvm, Intel SSE/AVX.

Experience

AeroFS, Palo Alto, California

Software Engineer **September 2011 – May 2013**

AeroFS is a private cloud file-sharing application. Design, proof, and Java implementation of patent-pending distributed algorithms for peer-to-peer file sharing. Major contributor to the automated, Python-based distributed system test infrastructure on Linux, Mac, and Windows virtual machines, to detect and prevent regressions in feature releases. Wrote dozens of distributed test scenarios with barrier-synchronization and simulated network partitions. Individually developed a Java REST service to collect sync metrics using dropwizard, JDBI and MySQL. Ported the user management service to Google's protobuf network protocol. Interviewer and recruiting experience.

Google, Mountain View, California

Software Engineering Intern **June 2015 – August 2015**

Platforms Performance Team. Prototyped distributed communication-avoiding Google Brain training algorithms to optimize data-center network traffic. Achieved linear scaling and 5× throughput over the existing baseline, by using a map-reduce structure among neighboring nodes with high-bandwidth links. Built prototypes with the Python API of `tensorflow.org` and Borg configurations (predecessor to `kubernetes.io`).

EPSON, Toronto, Canada

Software Development Intern **May 2007 – August 2008**

Developed an optical character recognition prototype in `C++` with a team of four, achieving recognition accuracy rates desired by management. Character recognition accuracy was improved by tracking errors in a substitution matrix, finding their sources, and redesigning suspect modules. Patented a separate project using gyroscope sensor streams to classify human motion.

Patents

Systems and methods for managing files in a cloud-based computing environment — US 20140259005 A1
M.C. Jeffrey and W. Wang

Human motion classification at cycle basis of repetitive joint movement — US 20100305480 A1
G. Fu and **M.C. Jeffrey**

Select Publications

Fractal: An execution model for fine-grain nested speculative parallelism — ISCA **2017**
S. Subramanian, **M.C. Jeffrey**, M. Abeydeera, H.R. Lee, V.A. Ying, J. Emer, D. Sanchez

Data-centric execution of speculative parallel programs — MICRO **2016**
M.C. Jeffrey, S. Subramanian, M. Abeydeera, J. Emer, D. Sanchez

Unlocking ordered parallelism with the Swarm architecture — IEEE Micro **2016**
M.C. Jeffrey, S. Subramanian, C. Yan, J. Emer, D. Sanchez

Education

Massachusetts Institute of Technology, Cambridge, MA

Ph.D., Computer Science, advised by Professor Daniel Sanchez **2013 – present**

GPA 4.8/5.0 in Computer Architecture, Database Systems, Distributed Algorithms, Machine Learning

University of Toronto, Toronto, Canada

M.A.Sc., Computer Engineering, advised by Professor J. Gregory Steffan **2011**

GPA 3.86/4.0 in Parallel and GPU Programming, On-Chip Networks, Algorithms, Info. Theory

B.A.Sc., Computer Engineering with Honors **2009**

GPA 3.76/4.0 in Distributed Systems, Optimizing Compilers, Operating Systems, DSP, and others