James Thomas

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Education

M. Eng., B.S., EECS, Massachusetts Institute of Technology, 5.0/5.0 (8/2012 – 6/2016)
Performance Engineering (6.172), Distributed Systems (6.824), Operating Systems (6.828), Large-Scale
Computer Systems (6.S897), Computer Architecture (6.004, 6.175), Digital Circuits Lab (6.111), Machine
Learning (6.036), Linear Optimization (6.251), Inference and Information (6.437)
Bellarmine College Preparatory (8/2008 – 5/2012)

Technical Experience

M. Eng. research with MIT Professor Matei Zaharia (9/2015 – present)
- Developing simple but expressive intermediate language called NVL for data-parallel computations
  that can target multicores, vector units, and GPUs, for use in applications like databases, machine
  learning, and graph algorithms
- Designing parallel backend for NVL loops; initial tests show performance comparable to Cilk
  implementations hand-tuned for each program

Research Intern, Microsoft Research Redmond (6/2015 – 8/2015)
- Built system for fast analytics on indexed social media data with Apache Spark-based computation
  layer and Apache Lucene-based storage layer
- Implemented support for incremental computation in the Spark compute layer; the system is more
  efficient and expressive than previous incremental batch processing systems

SuperUROP (research) with MIT Professor Charles Leiserson (9/2014 – 5/2015)
- Designed shared memory graph-parallel computation framework for locally connected graphs
  embeddable in 3-space, using cache-efficient Hilbert curve-based vertex ordering and other
  techniques (ongoing work)
- Worked on profiling tool to report per-function work and critical path length for parallel Cilk
  programs

Software Engineering Intern, Cloudera (5/2014-8/2014)
- Made a number of contributions to the open-source Hadoop Distributed Filesystem (HDFS),
  including more efficient storage of HDFS file blocks on nodes' local filesystems, faster data
  checksumming, and an API for clients to listen for filesystem events

Software Engineering Intern, Benchling (1/2014)
- Worked on a web application for the analysis of gel electrophoresis images, including algorithms for
  automatic identification of important image components

Simulation Software Engineering Intern, Palantir Technologies (5/2013-8/2013)
- Built a VM checkout service for use by automated testing frameworks – handled concurrency issues,
  persistence, and more

Software Engineering Intern, Cloudera (5/2012-8/2012)
- Added a wizard to Cloudera Manager that allows users to much more easily add public cloud nodes
  to their Hadoop clusters

Awards and Extracurricular Activities

- Fall 2014-2015 6.111 (Digital Circuits) Best Project Award
- 2014-15 co-president, South Asian Association of Students (SAAS) at MIT
- 2011 Research Science Institute (RSI) Scholar
- 2012 Intel Science Talent Search Semifinalist (top 300 of more than 1800 entries)
- 4th place in Foreign Extemporaneous at 2011 California State Speech and Debate Tournament
- Eagle Scout