

# James Thomas

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## Education

**Ph.D., Computer Science, Stanford University (9/2016 – present)**

**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)

**Bellarmino College Preparatory (8/2008 – 5/2012)**

## Technical Experience

**Research with Stanford Professor Pat Hanrahan (9/2016 – present)**

- Investigating faster place and route algorithms for FPGAs based on structural information provided by domain-specific hardware description languages

**Software Engineering Intern, Databricks (6/2016 – 9/2016)**

- Developed low-latency single-node streaming system competitive with modern cluster streaming systems with tens of nodes

**M. Eng. research with MIT Professor Matei Zaharia (9/2015 – present)**

- Developing simple but expressive intermediate language called Weld 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 Weld 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

## Awards and Extracurricular Activities

- School of Engineering Fellowship, Stanford (9/2016 – 6/2017)
- Fall 2014-2015 6.111 (Digital Circuits) Best Project Award at MIT
- 2014-15 co-president, South Asian Association of Students (SAAS) at MIT
- 2011 Research Science Institute (RSI) Scholar
- 4<sup>th</sup> place in Foreign Extemporaneous at 2011 California State Speech and Debate Tournament
- Eagle Scout