Leif Walsh

Employment

2011–present **Tokutek**, New York, NY, Senior Engineer.
Led design, development, documentation, and release engineering for concurrent, compressing, write-optimized Fractal Tree storage library and its integration into TokuMX for MongoDB.
Numerous speaking roles at conferences and meetups worldwide, product-oriented and academic.

2010 **Microsoft**, Redmond, WA, Intern.
Windows 8 subsystem performance benchmarking and analysis.

2009 **RethinkDB**, Mountain View, CA, Co-founder.
MySQL Storage Engine Plugin optimized for SSDs with persistent data structures.

2009 **Filesystems and Storage Lab**, Stony Brook University, Research Assistant.
Filesystem and database research, with applications to deduplication.

2008 **Google Platforms Group**, Mountain View, CA, Intern.
Python server and web programming for power management/monitoring.

2007 **Google Platforms Group**, Mountain View, CA, Intern.
C++ web server programming.

Research

2015 **Betrfs: A Right-Optimized, Write-Optimized File System**, SBU OSCAR Lab, *FAST '15*.
Filesystems, write-optimized external memory data structures.

2014 **Ark: A Real-World Consensus Implementation**, Tokutek, *Tech Report*.
An adaptation of the Raft consensus algorithm for MongoDB.

2009 **Using Better Data Structures to Save on Silicon**, SBU Massive Storage Lab.
Deduplication, filesystems, and next-generation storage media.

2008 **Homomorphic Signatures for Digital Photographs**, SBU SPLAT Lab, *Financial Crypto '11*.
Cryptography and computational geometry.

Education

2006–2011 **B.Sc. Mathematics, Computer Science**, *cum laude*, Stony Brook University, Stony Brook, NY.
Departmental Honors Program, Honors College, elective graduate coursework in complex analysis, knot theory, operating systems, computational geometry, cryptography, randomized algorithms.

Teaching Assistantships

Spring 2009 **Advanced Systems Programming in UNIX/C (CSE 376)**, *Prof. Erez Zadok*.
Development of robust, portable C programs in the UNIX environment.

Fall 2008 **Analysis of Algorithms (CSE 373)**, *Prof. George Hart*.
Design and analysis of general algorithm and data structure techniques.

Fall 2007 **Foundations of Computer Science: Honors (CSE 150)**, *Prof. Rob Johnson*.
Discrete math fundamentals: logic, proof, induction, runtime analysis, probability.

Skills

Expert — Algorithm design, C/C++, CMake, distributed systems theory, Git, MongoDB, Subversion, UNIX

Intermediate — AWS, Buildbot, Clojure, Docbook, Docker, Golang, functional programming, Java, MySQL, Perl, Python, Ruby

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