John Peter Stevenson

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EDUCATION

Stanford University   2008 – 2014
Ph.D. Electrical Engineering

Thesis: *Fine-Grain In-Memory Deduplication for Large-Scale Workloads*

Stanford University   2000 – 2002
M.S. Electrical Engineering

With focus on circuit design and semiconductor physics

U.S. Naval Academy   1996 – 2000
B.S. Control Systems Engineering

Graduated 1st in academic standing
Degree conferred with distinction

HONORS & AWARDS

Best Paper   2012
Sparse Matrix-Vector Multiply on the HICAMP Architecture, International Conference on Supercomputing

Best Startup Project   2011
Stanford MS&E-273: Punch Mobile

David Cheriton Fellow   2008 – 2014
Stanford Graduate Fellowship

SOE Fellow   2000 – 2002
Stanford School of Engineering Fellowship

Ward Prize   2000
Best undergraduate research for a multi-aperture camera array

PKP NHS Fellow   2000
Phi Kappa Phi National Honor Society Graduate Study Fellowship

Rhodes Finalist   1999
State level interviewee

Eagle Scout   1996

EXPERIENCE

Intel   2014 – Present
Santa Clara, CA, Architect

Wrote performance simulator to validate advanced cache technology. Drove effort for database acceleration technology. *!!fix me!!*

HICAMP Systems   2009 – 2014
Menlo Park, CA, Member of Technical Staff

Implemented world's first deduplicated DRAM memory system in FPGA logic. Wrote Verilog RTL for high speed and high strength hash function. Wrote SystemC and C++test infrastructure that automatically regenerates based on a high level graphical description of system protocol. Code generation implemented in Python and graphical description implemented in GraphViz.

U.S. Naval Academy   2006 – 2008
Annapolis, MD, Electrical Engineering Faculty

As an officer faculty member, taught undergraduate engineering major and core curriculum classes for 4 semesters. Topics included circuit analysis, logic design, and wireless.

Lawrence Livermore National Laboratory   2007
Livermore, CA, Photonics Group Intern

As a summer intern, characterized wavelength shift properties of a multiple section edge emitting laser system proposed for use as an optical logic gate.

USS Los Angeles (SSN-688)   2003 – 2006
Honolulu, HI, Officer

As Officer of the Deck, responsible for all operations submerged, surfaced, and in port, in lieu of the ship's Captain. As Engineering Officer of the Watch, responsible for all nuclear power plant operations, in lieu of the ship's Engineer. As Communications Officer and Mechanical Division Officer, supervised a shipboard division (~25 personnel).

Honda Research   2002
Mountain View, CA, Computer Vision Intern

Investigated algorithms for depth recovery in non-stereoscopic images.

Tensilica   2001
Sunnyvale, CA, Design Verification Intern

Wrote scripts to drive verification for customizable RTL code.

PUBLICATIONS

SITM   2014

SI-TM: Reducing Transactional Memory Abort Rates through Snapshot Isolation

H. Litz, D. Cheriton, A. Firoozshahian, O. Azizi, J.P. Stevenson, ASPLOS 2014

SpMV on HICAMP   2012

Sparse Matrix-Vector Multiply on the HICAMP Architecture

J.P. Stevenson, A. Firoozshahian, A. Solomatnikov, M. Horowitz, and D. Cheriton, ICS 2012

Winner of Best Paper Award at International Conference on Supercomputing, 2012

HICAMP   2012

HICAMP: Architectural Support for Efficient Concurrency-Safe Shared Structured Data Access

D. Cheriton, A. Firoozshahian, A. Solomatnikov, J.P. Stevenson, and O. Azizi, ASPLOS 2012

CPU db   2012

CPU db: Recording Microprocessor History

A. Danowitz, K. Kelley, J. Mao, J.P. Stevenson, and M. Horowitz, CACM 2012

IR for ChipGen   2011

Intermediate Representations for Controllers in Chip Generators

K. Kelley, M. Wachs, A. Danowitz, J.P. Stevenson, S. Richardson, M. Horowitz, DATE 2011

CPU Co-Optimization   2010

An Integrated Framework for Co-Optimization of Architecture and Circuits

O. Azizi, A. Mahesri, J.P. Stevenson, N. Zhou, S.J. Patel, and M. Horowitz, DATE 2010

PROJECTS

Zest – Memory Deduplicator for Linux   2012 – Present

Using LiME, zest counts duplicates in DRAM memory. Captures a snapshot of physical memory from a live instance of Linux. Performs post-mortem fine-grain deduplication to show the benefit of deduplicated memory systems. Shows that memory capacity is increased by over 2x in many common datacenter applications.

Hash-Stats   2014

Overflow Statistics for Large Hash Tables

Table utilization and table overflows are critical issues for large hash tables, but these topics receive scant attention on the Wikipedia and from introductory CS course material. This repository reduces theory to practice. Using published theoretical results, it provides simple matlab scripts to guide the practicing engineer when implementing a large hash table.

https://github.com/etep/hash-stats

Stanford Circuit Optimization Tool   2008 – Present

Provides optimal digital circuit design using convex optimization. Integrates with industry standard tools such as SPICE.

http://github.com/etep/scot

Punch Mobile   2011

Electronic payment processing with integrated consumer loyalty. Provided significant cost savings by disintermediating the credit card payment network using a direct consumer-to-business (C2B) back-end. Voted as top project in MS&E-273 by VC panel.

Faculty Mentor for Solar Boat   2006 – 2008

As an officer faculty member at the U.S. Naval Academy, mentored a multidisciplinary team of undergraduates competing in the world championship of solar electric boating.

SIMD Floating Point Adder   2001

Designed and taped out a fully functional 1x32 / 2x16 bit SIMD floating point adder with IEEE compliant rounding for Stanford independent projects in VLSI, EE-271. Silicon fabricated by TSMC in $0.5\mu m$ technology.