James Larkby-Lahet

<u>EDUCATION</u>:

M.S. Computer Engineering	Santa Clara University	Graduated w/ Distinction	Apr. 2014 – Mar. 2015
Computer Engineering	UC Santa Cruz	Ph.D. program	Jan. – Sept. 2012
Computer Science	University of Pittsburgh	Ph.D. program	Jan. 2006 – July 2011
B.S. Computer Engineering	University of Pittsburgh	Graduated	Dec. 2005

<u>WORK EXPERIENCE</u>:

Staff Software Engineer — Poly, formerly Plantronics
July 2017 – March 2020 — Santa Cruz, CA

I helped design an embedded ARM+Linux Bluetooth communication accessory, following it through the full lifecycle from conception to shipment, maintenance and cost-reduction. I had primary responsibility for the Bluetooth control path, audio routing, firmware update file transfers and integration, andv both the Yocto build process and the build server.

Platform Engineer — Formation Data Systems
April 2015 – May 2017 — Fremont, Ca

I contributed to cross-component designs, from consistency, to garbage collection, to stats. I worked with a small team to implement logical migration for the metadata storage component. I took ownership of the data path for that component and, after defining tests, rewrote significant portions to add new APIs, improve bookkeeping, and enhance performance.

Member Technical Staff / Software Engineer — NetApp
January 2008 – July 2008 — Pittsburgh, Pa

Programmer and Test Engineer — Union Switch and Signal
May – December 2002 — Pittsburgh, Pa

Programmer — Nanjing University of Chemical Technology
June – August 2001 — Nanjing, China

Programmer — Atlas Software Technologies, Inc
July 1999 – August 2000 — Pittsburgh, Pa

<u>RESEARCH EXPERIENCE</u>:

Graduate Researcher — Computer Engineering Dept., Santa Clara University
April 2014 – March 2015 — Santa Clara, Ca

I worked on a reliability scheme for streaming media and emerging storage technologies such as shingled write disks. I also worked on extending the XOmB OS single address-space memory model to distributed systems.

Graduate Researcher — Computer Engineering Dept., UC Santa Cruz
January 2012 – Sept 2012 — Santa Cruz, Ca

I worked on a userspace NIC driver for Lockbox, a mechanism to secure programs against an untrusted kernel.

Graduate Researcher — Computer Science Dept., University of Pittsburgh
August 2007 – August 2009, Dec 2010 – July 2011 — Pittsburgh, Pa

I was the principal developer in our storage group of an innovative storage reliability scheme. I also contributed to an ongoing project on distributed storage. I developed algorithms for adaptive caching and prefetching, using machine learning to meet multiple user-defined goals such as improved performance and lower power usage.

Research Intern — Storage-Server Integration, IBM Corp.
May 2007 – August 2007 — San Jose, Ca

I investigated practical limits on cache performance and developed a scan-resistant cache algorithm, improving on existing IBM intellectual property and was eventually awarded two patents.

Research Intern — Interfaces & Architecture Dept, Seagate Technology
May 2006 – August 2006 — Pittsburgh, Pa

I investigated the interplay of various filesystems, I/O schedulers, I/O queuing and disk performance parameters. Since I/O path optimization strategies may conflict, a holistic approach was needed. I collected I/O request traces under a variety of workloads, and analyzed throughput, average response time and the amount of data requested.

Undergraduate Researcher — Computer Science Dept., University of Pittsburgh
January 2003 – December 2005 — Pittsburgh, Pa

I designed power-aware prediction algorithms for I/O workloads.

Undergraduate Research Assistant — PERCS Project, Pittsburgh Supercomputing Center
June 2004 – July 2005 — Pittsburgh, Pa

Undergraduate Researcher — Chemistry Department, University of Pittsburgh
November 2000 – June 2001 — Pittsburgh, Pa

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LANGUAGES: Bash, C, C++, D, Haskell, Java, Perl, Python, R, Rust, SQL, x86 Assembly, Zig

TEACHING EXPERIENCE:
Part Time Instructor Computer Science Dept., University of Pittsburgh
August 2011 – December 2011 Pittsburgh, Pa
    I taught the Advanced Systems Software class, with a focus on the XOmB operating system.

Teaching Assistant Computer Science Dept., University of Pittsburgh
August 2005 – May 2007, August 2009 – May 2010 Pittsburgh, Pa
    For the undergraduate OS course, I taught recitations and graded assignments. For the Advanced Systems Software course, I helped students to design and complete group research term projects . I have also taught recitations and graded for Intro to Systems Software (C and UNIX) and Discrete Math, and graded the graduate OS course.

PATENTS:
James Larkby-Lahet, Prashant Pandey. Stable adaptive replacement cache processing. US 8612689. Granted Dec 17, 2013.
James Larkby-Lahet, Prashant Pandey. Method for improving frequency-based caching algorithms by maintaining a stable history of evicted items. US 8250306. Granted Aug 21, 2012.

CONFERENCE TALKS:
James Larkby-Lahet, "Persistent Virtual Memory in the Great New Operating System In the Sky". *Systems We Love*. San Francisco, 2016. https://www.youtube.com/watch?v=Q8d77KV_gI

CONFERENCE PUBLICATIONS:
Ahmed Amer, Jehan-François, Thomas Schwarz, Vincent Ciotola, James Larkby-Lahet, "Outshining Mirrors: MTTDL of Fixed-Order SSPiRAL Layouts," *Proceedings of the International Workshop on Storage Network Architecture and Parallel I/Os (SNAPI'07)*. San Diego, CA: September 2007.

Alma Riska, James Larkby-Lahet, Erik Riedel. "Evaluating Optimization through the IO Path". *Proceedings of the USENIX Annual Technical Conference*. Santa Clara, June 2007.

James Larkby-Lahet, Ganesh Santhanakrishnan, Ahmed Amer and Panos Chrysanthis. "STEP: Self-Tuning Energy-safe Predictors". *Proceedings of the 6th International Conference on Mobile Data Management (MDM'05)*, Ayia Napa, Cyprus: ACM, May 2005.

WORKSHOP PAPERS:
James Larkby-Lahet, Brian Madden, Dave Wilkinson, Daniel Mosse. "XOmB: an Exokernel for Modern 64-bit, Multicore Hardware" *WSO - VII Workshop de Sistemas Operacionais*. Belo Horizonte, Brasil. July 2010.

POSTERS:
James Larkby-Lahet, Brian Madden, Dave Wilkinson, Daniel Mosse, Ahmed Amer. "OS Fundementalism: Using XOmB for fundamental OS Research" *23rd SOSP*. Cascais, Portugal. October, 2011.

Vincent Ciotola, James Larkby-Lahet, Ahmed Amer.. "SSPiRAL Layouts: Practical Extreme Reliability". *USENIX Annual Technical Conference Poster Session*. Santa Clara, June 2007.

OPEN SOURCE PROJECTS:
I led a group developing a 64-bit OS in the D language, XOmB. Our design is loosely based on the original exo-kernel papers. In addition to producing a novel research system, it has also been our objective to introduce undergraduates to research, systems programming and large-scale software development.

AWARDS:
Graduate Acedemic Excellence in Engineering Award. Santa Clara University (2015).
Inducted into HKN honor society (2004)
Clapp Endowment Scholarship and University Scholarship (2000–2004), Freeman Asia Scholarship (2001)

PERTINENT COURSES: Advanced Leadership, Distributed OS, Power-Aware Algorithms, High Performance Computing, Implementing VLSI CAD, VLSI 1&2, Wireless Networks, 3 terms of Mandarin, Pitt in China 2001.

SERVICE: Reviewer: IWSSPS 2009, Transactions on Design Automation of Electronic Systems, ICDCS 2006, ICAC 2006