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, and 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

<u>Languages</u>: Bash, C, C++, D, Haskell, Java, Perl, Python, R, Rust, SQL, x86 Assembly, Zig

<u>Teaching Experience</u>:

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.

<u>Patents</u>:
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.

<u>Conference Talks</u>:
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

<u>Conference Publications</u>:
Ahmed Amer, Jehan-François Pâris, 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.

<u>Workshop Papers</u>:
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.

<u>Posters</u>:
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.

<u>Open Source Projects</u>:
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.

<u>Awards</u>:
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)

<u>Pertinent Courses</u>: 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.

<u>Service</u>: Reviewer: IWSSPS 2009, Transactions on Design Automation of Electronic Systems, ICDCS 2006, ICAC 2006