

Peter A. H. Peterson

CONTACT INFORMATION	Dr. Peter A. H. Peterson 329 Heller Hall 1114 Kirby Drive Duluth, MN 55812	<i>Phone:</i> (218) 726-7988 <i>Email:</i> pahp@d.umn.edu <i>Web:</i> http://www.d.umn.edu/~pahp/
RESEARCH INTERESTS	I perform research to improve the security and energy efficiency of operating systems. I also research Computer Science education and curriculum development. My current systems research combines non-lossy compression, heuristic models and classic operating systems concepts to create a transparent adaptive compression facility capable of automatically saving time, space and energy. My current security research includes Adaptive Compression systems that provide benefits while minimizing information leakage. Previous security projects focus on improving confidentiality in operating systems through information flow control and encryption. My ongoing education work centers on hands-on, publicly available computer security education homework, simple but effective security competitions, and investigating security misconceptions.	
EDUCATION	Ph.D. Computer Science University of California, Los Angeles	Fall 2013 Los Angeles, California
	Committee: Peter L. Reiher (advisor), Todd Millstein (co-advisor), Junghoo “John” Cho, William J. Kaiser, D. Stott Parker Major field: <i>Software Systems</i> Minor fields: <i>Databases</i> and <i>Artificial Intelligence</i> Thesis Topic: <i>Datacomp: Locally Independent Adaptive Compression for Real-World Systems</i>	
	M.Sc. Computer Science University of California, Los Angeles	Winter 2009 Los Angeles, California
	Committee: Peter L. Reiher (advisor), Junghoo “John” Cho, Todd Millstein Comprehensive: <i>Security Exercise Design Using DETER</i>	
	Bachelor of Music Education (BME) North Park University	May 1999 Chicago, Illinois
ACADEMIC APPOINTMENTS	Assistant Professor of Computer Science Swenson College of Science and Engineering, University of Minnesota Duluth	January 2015 — Duluth, Minnesota
PROFESSIONAL EXPERIENCE	Research Scientist University of Southern California Information Sciences Institute	May 2014–December 2014 Marina Del Rey, California
	Research Assistant University of California, Los Angeles	July 2007–Fall 2013 Los Angeles, California
	Director of Information Technology The Yucaipa Companies	October 2005–June 2006 West Hollywood, California
	PC Coordinator North Park University	July 1999–June 2005 Chicago, Illinois
TEACHING EXPERIENCE	Instructor, Computer Security (CS 4821) University of Minnesota Duluth	Most semesters since Spring 2015 Duluth, Minnesota
	Instructor, Advanced Computer Security (CS 8821) University of Minnesota Duluth	Each Fall since 2015 Duluth, Minnesota

Instructor, Operating Systems (CS 5631) University of Minnesota Duluth	Each Spring since 2016 Duluth, Minnesota
Co-instructor, Embedded Systems Security University of California, Los Angeles	Fall 2011 Los Angeles, California
Teaching Assistant, Graduate Computer Security University of California, Los Angeles	Spring 2008, 2010 & 2011 Los Angeles, California
Teaching Assistant, Undergraduate Computer Security University of California, Los Angeles	Winter 2008 & Fall 2010 Los Angeles, California
Teaching Assistant, Computer Organization University of California, Los Angeles	Fall 2007 Los Angeles, California
Instructor, Computer Networking North Park University	Spring 2003 Chicago, Illinois

PUBLICATIONS

CONFERENCES AND WORKSHOPS

1. O. Egbue, D. Naidu and P. Peterson. “The Role of Microgrids in Enhancing Macrogrid Resilience.” *Proceedings of the International Conference on Smart Grid and Clean Energy Technologies (ICSGCE)*, October 2016.
2. P. A. H. Peterson and P. Reiher. “Datacomp: Locally Independent Adaptive Compression for Real-World Systems”. *2016 IEEE 36th International Conference on Distributed Computing Systems (ICDCS)*, June 2016 (Acceptance rate: 17%).
3. J. Mirkovic and P. A. H. Peterson. “Class Capture-the-Flag Exercises”. *USENIX Summit on Gaming, Games and Gamification in Security Education (3GSE)*, August 2014.
4. M. Gray, P. A. H. Peterson and P. Reiher. “Scaling Down Off-The-Shelf Data Compression: Backwards-Compatible Fine-Grain Mixing”. In *Proceedings of the IEEE International Conference on Distributed Computing Systems (ICDCS)*, June 2012 (Acceptance rate: 14%).
5. C. Fleming, P. A. H. Peterson, E. Kline and P. Reiher. “Data Tethers: Preventing Information Leakage by Enforcing Environmental Data Access Policies”. In *Proceedings of the IEEE International Conference on Communications (ICC)*, June 2012 (Acceptance rate: 37%).
6. A. Fujimoto, P. A. H. Peterson and P. Reiher. “Investigating the Energy Costs of Full Disk Encryption”. In the *Workshop on Energy Consumption and Reliability of Storage Systems (ERSS)*, part of the *2012 International Green Computing Conference (IGCC)*, June 2012.
7. J. Mirkovic, M. Ryan, J. Hickey, K. Sklower, P. Reiher, P. A. H. Peterson, B. H. Kang, M. C. Chuah, D. Massey and G. Ragusa. “Teaching Security With Network Testbeds”. In the *Proceedings of the ACM SIGCOMM Workshop on Education*, August, 2011.
8. P. A. H. Peterson, D. Singh, W. Kaiser and P. Reiher. “Investigating Energy and Security Trade-offs in the Classroom With the Atom LEAP Testbed”. In the *4th USENIX Workshop on Cyber Security Experimentation and Test (CSET)*, August 2011.
9. P. A. H. Peterson. “Cryptkeeper: Improving Security with Encrypted RAM”. In *Proceedings of the IEEE Conference on Technologies for Homeland Security (HST)*, November 2010.
10. P. A. H. Peterson and P. Reiher. “Security Exercises for the Online Classroom with DETER”. In the *3rd USENIX Workshop on Cyber Security Experimentation and Test (CSET)*, August 2010.

BOOK CHAPTERS

1. P. A. H. Peterson and C. Lee. “Dark Side of Media & Technology: A 21st Century Guide to Media and Technological Literacy”. Chapter: “Leaks are Forever: Information Security and Cybercrime” (*to appear in 2018*)

PRESENTATIONS

1. “Datacomp: Locally Independent Adaptive Compression for Real-World Systems”. *2016 IEEE 36th International Conference on Distributed Computing Systems (ICDCS)*, June 2016.
2. “Class Capture-the-Flag Exercises”. *USENIX Summit on Gaming, Games and Gamification in Security Education (3GSE)*, August 2014.
3. “Investigating the Energy Costs of Full Disk Encryption”. Presented at the *2nd Workshop on Energy Consumption and Reliability of Storage Systems (ERSS)*, San Jose, CA, June 2012.
4. “Scaling Down Off-The-Shelf Data Compression: Backwards-Compatible Fine-Grain Mixing”. Presented at the *32nd Annual IEEE International Conference on Distributed Computing Systems (ICDCS)*, Macau, China, June 2012.
5. “Investigating Energy and Security Trade-offs in the Classroom With the Atom LEAP Testbed”. Presented at the *4th USENIX Workshop on Cyber Security Experimentation and Test (CSET)*, San Francisco, CA, August 2011.
6. “Cryptkeeper: Improving Security with Encrypted RAM”. Presented at the *12th Annual IEEE Conference on Technologies for Homeland Security Technologies (HST)*, Waltham, MA, November 2010.
7. “Security Exercises for the Online Classroom with DETER”. Presented at the *3rd USENIX Workshop on Cyber Security Experimentation and Test (CSET)*, Washington, D.C., August 2010.

DEMONSTRATIONS

1. “UMDCYL and Little Python: Teaching Coding by Playing Games”. Work-in-progress demonstration without paper at the *2018 Midwest Instructional Computing Symposium (MICS)*, Duluth, MN, April 2018.
2. “Do This and Nothing More: Teaching Adversarial Thinking Without Security”. Work-in-progress demonstration without paper at the *2018 Midwest Instructional Computing Symposium (MICS)*, Duluth, MN, April 2018.

WHITE PAPERS

D. Singh, P. A. H. Peterson, P. Reiher and W. Kaiser. “The Atom LEAP Platform For Energy-Efficient Embedded Computing: Architecture, Operation, and System Implementation”, December 2010. Available at <http://lasr.cs.ucla.edu/~pedro/docs/leap-aosi.pdf>

EDUCATIONAL MATERIALS

Computer Security Exercises

Multiple hands-on, exploratory security exercises that simulate real-world environments and problems using widely-used open source software and DETERLab, a large, free-to-use public security and education testbed. Still under active development and maintenance, these exercises have been used at over 18 institutions of higher learning in the U.S. and abroad.

Lessons from LARS

A YouTube video channel containing short, student-contributed tutorials on important software tools with the intent to help newbies with the learning curve in their classes.

<https://www.youtube.com/playlist?list=PLHnc49MScQBBimi-1UZ2HBxDAuJYIYAWF>

PDP-12 Restoration Project

I am currently the primary manager of an effort to restore a Digital Equipment Corporation PDP-12 (1969-1972), one of perhaps only five operational units left in the world, to use for education, outreach, and research. We host a blog and a YouTube channel documenting the project.

Blog: <https://umdpdp12.blogspot.com/>

YouTube: <https://www.youtube.com/playlist?list=PLHnc49MScQBBI1VIirpZ1Zjdh91U5Q6-6>

SERVICE
& OUTREACH

TPC Co-Chair 2018
USENIX Workshop on Cybersecurity Experimentation and Test (CSET)

Member Spring 2018
Swenson College of Science and Engineering Executive Committee

Member 2017-2018
UMD Computer Science Tenure-track Search Committee

Campus Representative 2016 —
USENIX Association – the Advanced Computing Systems Association

TPC Member 2016 —
International Workshop on Quality of Service (IWQoS)

Editor / Publisher 2016 —
UMD Information Security News
<https://groups.google.com/a/d.umn.edu/forum/#!forum/infosec-news>

Organizer and Commissioner 2016 —
UMD Cybergames Youth League (UMDCYL) <https://umdcyl.d.umn.edu/>

Member 2015 —
Encouraging Women in CS Committee

Member 2015 —
UMD Computer Science Masters Admission Committee

Volunteer 2015—
UMD SCSE Campus Preview

Volunteer Presenter 2015 —
UMD SCSE Science Day (The 2017-2018 Science Day will be in 2018)

Poster TPC Member 2015
International Workshop on Quality of Service (IWQoS)

Reviewer 2014-2016
UCLA Computer Science Doctoral Admission Committee

AWARDS &
NOMINATIONS

• Student-nominated for Outstanding Faculty of the Year February, 2018

GRANTS

- Chancellor's Faculty Small Grant November, 2017
- Student Success & Retention Small Grant December 2016
- Chancellor's Small Grant November, 2015
- Public Engagement Grant June, 2015

PROFESSIONAL
MEMBERSHIPS

- ACM, ACM SIGCSE (Special Interest Group for Computer Science Education)
- IEEE, IEEE Computer Society
- USENIX (Campus Representative)