

Jed Liu

Barefoot Networks
Compilers and Tools Team
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Education

- Doctor of Philosophy**, Computer Science, Cornell University August 2012
Adviser: Andrew C. Myers
Committee: Robbert van Renesse, Ravi Ramakrishna, Andrew C. Myers (chair)
Thesis: *Towards a Secure Federated Information System*
- Master of Science**, Computer Science, Cornell University January 2009
- Master of Engineering**, Computer Science, Cornell University May 2002
Adviser: Andrew C. Myers
Thesis: *JMatch: Java plus Pattern Matching*
- Bachelor of Arts**, Computer Science and Mathematics, Cornell University May 2001
Awards: *magna cum laude* in Computer Science, *cum laude* in Mathematics, with distinction in all subjects, Phi Beta Kappa, Golden Key International Honour Society
Adviser: Bart Selman

Employment

- Research Engineer**, Compilers and Tools, Barefoot Networks 2017–present
- Postdoctoral Researcher**, Computer Science, Cornell University 2012–2017
- Intern**, Trilogy, Austin, TX Summer 2001

Peer-Reviewed Publications

- Jed Liu**, Joe Corbett-Davies, Andrew Ferraiuolo, Alexander Ivanov, Mulong Luo, G. Edward Suh, Andrew C. Myers, Mark Campbell. Secure autonomous cyber-physical systems through verifiable information flow control. In *Proc. 2018 ACM Workshop on Cyber-Physical Systems Security and Privacy* (CPS-SPC 2018, acceptance rate 36%), pages 48–59, Toronto, ON, Canada, October 2018. Best paper award.
- Jed Liu**, William Hallahan, Cole Schlesinger, Milad Sharif, Jeongkeun Lee, Robert Soulé, Han Wang, Călin Cașcaval, Nick McKeown, Nate Foster. p4v: Practical Verification for Programmable Data Planes. In *Proc. 2018 ACM SIGCOMM Conference* (SIGCOMM 2018, acceptance rate 18%), pages 490–503, Budapest, Hungary, August 2018.
- Jed Liu**, Owen Arden, Michael D. George, and Andrew C. Myers. Fabric: Building Open Distributed Systems Securely by Construction. *Journal of Computer Security*, May 2017, Vol. 25, Issue 4/5, pp. 367–426.
- Isaac Sheff, Tom Magrino, **Jed Liu**, Andrew C. Myers, and Robbert van Renesse. Safe Serializable Secure Scheduling: Transactions and the Trade-Off Between Security and Consistency. In *Proc. 23rd ACM Conference on Computer and Communications Security* (CCS 2016, acceptance rate 16%), pages 229–241, Vienna, Austria, October 2016.
- Owen Arden, **Jed Liu**, and Andrew C. Myers. Flow-Limited Authorization. In *Proc. 28th IEEE Computer Security Foundations Symposium* (CSF 2015, acceptance rate 34%), pages 569–583, Verona, Italy, July 2015.
- Jed Liu** and Andrew C. Myers. Defining and Enforcing Referential Security. In *Proc. 3rd Conference on Principles of Security and Trust* (POST 2014, acceptance rate 26%), pages 199–219, Grenoble, France, April 2014.

- Jed Liu**, Tom Magrino, Owen Arden, Michael D. George, and Andrew C. Myers. Warranties for Faster Strong Consistency. In *Proc. 11th USENIX Symposium on Networked Systems Design and Implementation* (NSDI 2014, acceptance rate 17%), pages 503–517, Seattle, WA, USA, April 2014.
- Owen Arden, Michael D. George, **Jed Liu**, K. Vikram, Aslan Askarov, and Andrew C. Myers. Sharing Mobile Code Securely with Information Flow Control. In *Proc. 33rd IEEE Symposium on Security and Privacy* (Oakland 2012, acceptance rate 13%), pages 191–205, San Francisco, CA, USA, May 2012.
- Jed Liu**, Michael D. George, K. Vikram, Xin Qi, Lucas Wayne, and Andrew C. Myers. Fabric: A Platform for Secure Distributed Computation and Storage. In *Proc. 22nd ACM Symposium on Operating Systems Principles* (SOSP 2009, acceptance rate 16%), pages 321–334, Big Sky, MT, USA, October 2009.
- Stephen Chong, **Jed Liu**, Andrew C. Myers, Xin Qi, K. Vikram, Lantian Zheng, and Xin Zheng. Secure Web Applications via Automatic Partitioning. In *Proc. 21st ACM Symposium on Operating Systems Principles* (SOSP 2007, acceptance rate 19%), pages 31–44, Stevenson, WA, USA, October 2007. Best paper award.
- Jed Liu**, Aaron Kimball, and Andrew C. Myers. Interruptible Iterators. In *Proc. 33rd ACM Symposium on Principles of Programming Languages* (POPL 2006, acceptance rate 20%), pages 283–294, Charleston, SC, USA, January 2006.
- Jed Liu** and Andrew C. Myers. JMatch: Iterable Abstract Pattern Matching for Java. In *Proc. 5th International Symposium on Practical Aspects of Declarative Languages* (PADL 2003, acceptance rate 40%), pages 110–127, New Orleans, LA, USA, January 2003.

Technical Reports

- Isaac Sheff, Tom Magrino, **Jed Liu**, Andrew C. Myers, and Robbert van Renesse. Safe Serializable Secure Scheduling: Transactions and the Trade-Off Between Security and Consistency. arXiv:1608.04841, August 2016.
- Owen Arden, **Jed Liu**, and Andrew C. Myers. Flow-Limited Authorization: Technical Report. Technical Report 1813-40138, Computer Science Department, Cornell University, Ithaca, NY, USA, May 2015.
- Jed Liu** and Andrew C. Myers. A Language for Securely Referencing Persistent Information in a Federated System. Technical Report 1813-35150, Computer Science Department, Cornell University, Ithaca, NY, USA, January 2014.
- Jed Liu** and Andrew C. Myers. JMatch: Java plus Pattern Matching. Technical Report TR2002-1878, Computer Science Department, Cornell University, Ithaca, NY, USA, October 2002.

Dissertation

- Jed Liu**. Towards a Secure Federated Information System. Cornell University, Ithaca, NY, USA, August 2012. Ph.D. thesis.

Honours and Awards

- Graduate Teaching Award, Department of Computer Science, Cornell University, 2007-2008
- Best Paper Award, ACM Symposium on Operating Systems Principles (SOSP), 2007
- Winner, IBM Linux Scholar Challenge, 2002
- Graduate Teaching Award, Department of Computer Science, Cornell University, 2001-2002
- Second Place, ACM Programming Contest, Greater New York Region, 1999 and 2000
- Bronze Academic Medal, Governor General of Canada, 1997

Research Experience

Postdoctoral Researcher, Cornell University

August 2012 – November 2017

Research Assistant, Cornell University

June 2003 – August 2012

Developed Fabric, a federated and decentralized system for securely sharing information and computation despite distrust.

Software release at <http://www.cs.cornell.edu/projects/fabric/>.

Developed Swift, a language-based approach to developing secure web applications.

Software release at <http://www.cs.cornell.edu/jif/swift/>.

Developed interruptible, declarative iterators as part of the JMatch language project.

Software release at <http://www.cs.cornell.edu/projects/jmatch/>.

Advised by Andrew C. Myers

Research Assistant, Cornell University

August 2000 – October 2002

Developed JMatch, an extension to Java with pattern matching that supports both data abstraction and iteration abstraction.

Adviser: Andrew C. Myers

Teaching Experience

Teaching Assistant, Cornell University

- CS 6110, *Advanced Programming Languages*, Spring 2009
- CS 316, *Computer System Organization and Programming*, Fall 2007
- CS 411, *Programming Languages*, Fall 2003

Teaching Assistant, University of Washington

- CSE 341, *Programming Languages*, Spring 2003
- CSE 142, *Computer Programming I*, Winter 2003
- CSE 341, *Programming Languages*, Fall 2002

Teaching Assistant, Cornell University

- CS 212, *Computers and Programming (Practicum)*, Spring 2002
- CS 513, *System Security*, Spring 2002
- CS 472, *Foundations of Artificial Intelligence*, Fall 2001
- CS 312, *Structure and Interpretation of Computer Programs*, Fall 2000

Professional Activities

Programming Languages Design and Implementation (PLDI) External Review Committee 2016

Principles of Programming Languages (POPL) Artifact Evaluation Committee 2015

Reviewed papers for Euro S&P 2016, Oakland 2015, CSF 2015, CCS 2014, EuroSys 2013, CCS 2013, PLAS 2011, PLDI 2010, CSF 2010, SOSP 2009, Oakland 2008, ECOOP 2008, SOSP 2007, TISSEC 2006, OOPSLA 2006, ESOP 2006, POPL 2005.