Raymond Cheng

Contact Information

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Research Statement

My research interests are in distributed systems and security, with a focus on cloud security and privacy. I am interested in building novel systems that broaden the rights of Internet users. These projects include privacy-preserving systems that give users better control over their data and systems that spread digital freedom of speech and information to citizens around the world.

Current Position

University of California, Berkeley, Berkeley, CA
Postdoctoral Researcher in Security Research Group, EECS
- Advisor: Prof. Dawn Song

Education

University of Washington, Seattle, WA — expected 2017
Ph.D. Candidate in Computer Science and Engineering
- Thesis: *Practical Improvements to User Privacy in Cloud Applications*
- Advisor: Prof. Thomas Anderson and Prof. Arvind Krishnamurthy

M.S. in Computer Science

Massachusetts Institute of Technology, Cambridge, MA
M.Eng. in Electrical Engineering and Computer Science — 2010
- Thesis: *WhanauSIP - A Secure Peer-to-Peer Communications Platform*
- Advisor: Prof. Frans Kaashoek and Dr. Chris Lesniewski-Laas

B.S. in Electrical Engineering and Computer Science — 2009
B.S. in Physics — 2009

Professional Experience

National Security Agency — Maryland
Laboratory for Telecommunications Sciences — Aug 2005 - Apr 2011
- Technical lead in a large program to secure critical telecommunications networks.

Microsoft Research Asia — Beijing, China
System Research Group, Dr. Lidong Zhou — Apr 2011 - Aug 2011
- Research Intern

Google — New York, NY
Search Quality, Michael Schueppert and Mayur Thakur — Jun 2012 - Sep 2012
- Software Engineer Intern

Google Ideas, Lucas Dixon and Jared Cohen — Sep 2014 - Jan 2015
- Software Engineer Intern

Teaching Experience

UC Berkeley Electrical Engineering and Computer Science
- Blockchain, Cryptoeconomics, and the Future of Technology, Business and Law (CS294-144) Instructor — Jan 2018 - May 2018
  Lecturers: Raymond Cheng, Gregory La Blanc, Dawn Song, Adam Sterling

UW Computer Science and Engineering

- Distributed Systems (CSE452) Teaching Assistant — Jan 2016 - Mar 2016
  Lecturer: Tom Anderson
- Computer Systems (CSE550) Teaching Assistant — Sep 2012 - Dec 2012
  Lecturer: Arvind Krishnamurthy
- Networks Seminar (CSE590L) Coordinator — Apr 2013 - Jun 2016
  Coordinators: Raymond Cheng, Will Scott, Seungyeop Han
- Robotics Systems Seminar (CSE590RS) Coordinator — Jun 2016 - Sep 2016

UW Bioengineering Department

- Neural Engineering (BIOEN498C) Teaching Assistant — Sep 2011 - Dec 2011
  Lecturer: Albert Folch

Open Source Projects

Ekiden
- Source Code: https://github.com/ekiden/

Talek
- Source Code: https://github.com/privacylab/talek

uProxy
- Website: uproxy.org
- Source Code: https://github.com/uproxy/

Kingdom
- Source Code: https://github.com/ryscheng/kingdom

Radiatus
- Website: radiatus.io
- Source Code: https://github.com/freedomjs/radiatus

freedom.js
- Website: freedomjs.org
- Source Code: https://github.com/freedomjs/freedom

Service

High School Outreach

Presented to high school students from around the country on the exciting possibilities of a career in computer science. Presentations included live demos and college advice.
- NEPA Girls Who Code, Scranton, PA.
- Delaware Valley H.S., Milford, PA
- UW CSE Open House, Seattle, WA
- Meadowdale H.S., Lynnwood, WA

Hackathon Mentorship
- Grace Hopper Open Source Day, Houston, TX — Oct 2015
- NYUAD International Hackathon for Social Good in the Arab World, Abu Dhabi, UAE. — Feb 2014

UW Science and Engineering Business Association (SEBA)

VP of Operations — 2012-2015
- Managed the UW SEBA website, with $> 20,000$ page views per month.
- Managed the UW SEBA mentorship program, the largest science and engineering mentorship program on campus.

Refereed Publications

[1] Cheng, R., He, W., Hynes, N., Johnson, N., Kos, J., Zhang, F., Juels, A., Miller, A., Song, D. *Ekiden: A Platform for Private, Trustworthy, and Performant Smart Contract Execution.* In submission.

[2] Cheng, R., Scott, W., Zhang, I., Anderson, T., Krishnamurthy, A., Parno, B. *Talek: Private Group Messaging with Indistinguishable Access Patterns.* In submission.

[3] Cheng, R., Scott, W., Ellenbogen, P., Howell, J., Roesner, F., Krishnamurthy, A., and Anderson, T. *Radiatus: a Shared-Nothing Server-Side Web Architecture.* ACM Symposium on Cloud Computing (SOCC). 2016

[4] Zhang, I., Lebeck, N., Fonseca, P., Holt, B., Cheng, R., Norberg, A., Krishnamurthy, A., Levy, H. *Diamond: Automating Data Management and Storage for Wide-area, Reactive Applications.* 11th USENIX Symposium on Operating Systems Design and Implementation (OSDI). 2016.

[5] Bhoraskar, R., Langenegger, D., He, P., Cheng, R., Scott, W., and Ernst, M. *User scripting on Android using BladeDroid.* The 5th ACM SIGOPS Asia-Pacific Workshop on Systems (APSYS). 2014.

[6] Cheng, R., Scott, W., Krishnamurthy, A., and Anderson, T. *FreeDOM: a New Baseline for the Web.* The 11th ACM Workshop on Hot Topics in Networks (HotNets XI). 2012.

[7] Cheng, R., Hong, Ji., Kyrola, A., Miao, Y., Weng, X., Wu, M., Yang, F., Zhou, L., Zhao, F., and Chen, E. *Kineograph: Taking the Pulse of a Fast-Changing and Connected World.* Proceedings of the 7th ACM European Conference on Computer Systems (Eurosys). 2012.

Technical Reports

[8] Scott, W., Cheng, R., Li, J., Krishnamurthy, A., and Anderson, T. *Blocking-Resistant Network Services using Unblock.* UW Technical Report UW-CSE-14-06-01. 2014.

[9] Cheng, R., Schueppert, M., Becker, H., and Thakur, M. *SolocoRank: Social Signals for Local Search Quality.* UW Technical Report UW-CSE-13-11-05. 2013.

[10] Scott, W., Cheng, R., Krishnamurthy, A., and Anderson, T. *freedom.js: an Architecture for Serverless Web Applications* UW Technical Report. UW-CSE-13-05-03. 2013.

Patents

[11] Yang, F., Zhou, L., Wu, M., Kyrola, A., Cheng, R., Miao, Y., Weng, X., and Hong, J. *Platform for Continuous Graph Update and Computation.* Patent Number 9244983. Microsoft Research, submitted 2011.

Invited Talks and Conference Presentations

[12] **Talek: Private Group Messaging with Indistinguishable Access Patterns**
- UC Berkeley RISE Security / Sunblaze Seminars. Berkeley, CA. Oct 2017
- Stanford Security Seminar. Palo Alto, CA. Apr 2017

[13] **Privacy as a Service**
- Various Universities. USA, Canada, Europe. Jan-Mar 2017

[14] **Radiatus: a Shared-Nothing Server-Side Web Architecture.**
- SOCC: ACM Symposium on Cloud Computing. Santa Clara, CA. Oct 2016

[15] **uProxy: a Social Proxy for your Browser**
- Circumvention Tech Festival. Valencia, Spain. Mar 2015
- TA3M. New York, NY. Nov 2014
- RIPE69. London, United Kingdom. Nov 2014

[16] **User scripting on Android using BladeDroid**
- APSYS: ACM Asia-Pacific Workshop on Systems. Beijing, China. Jun 2014
- Microsoft Research Asia. Beijing, China. Jun 2014

[17] **uProxy: Crowdsourcing in the Face of Digital Repression**

- Google Ideas Summit. New York, NY. Oct 2013
- YouTube. http://www.youtube.com/watch?v=aGOXMRJWSeg

[18] **FreeDOM: a New Baseline for the Web**
- HotNets XI: Hot Topics in Networks. Redmond, WA. Oct 2012

[19] **Kineograph: Taking the Pulse of a Fast-Changing and Connected World**
- Eurosys Conference. Bern, Switzerland. Apr 2012
- Stanford MobiSocial Seminar. Palo Alto, CA. Apr 2012
- Palantir. Palo Alto, CA. May 2012

[20] **Donor Appreciation Speech**
- UW CSE Donor Luncheon. Seattle, WA. Apr 2012

Press

UC Berkeley

Cryptocurrencies Come to Campus
https://www.nytimes.com/2018/02/08/technology/cryptocurrencies-come-to-campus.html

uProxy

Select articles:

Google Unveils Tools to Access Web From Repressive Countries
http://business.time.com/2013/10/21/google-digital-rebels/
Google's uProxy: A Peer-to-Peer Gateway to Internet Freedom
http://mashable.com/2013/10/21/google-uproxy-internet-freedom/
Google announces uProxy: internet censorship avoidance in a browser extension
http://www.engadget.com/2013/10/21/google-ideas-uproxy/
'Running battle': How Google hopes to beat countries cracking down on Internet freedom
http://usnews.nbcnews.com/_news/2013/10/23/21080699-running-battle-how-google-hopes-to-beat-countries-cracking-down-on-internet-freedom
Google uProxy lets you surf securely through a friends connection
http://www.geek.com/apps/google-uproxy-lets-you-surf-securely-through-a-friends-connection-1574584/
This Google Browser Extension Will Allow You To Bypass Internet Censorship
http://www.fastcompany.com/3020362/fast-feed/this-google-browser-extension-will-allow-you-to-bypass-internet-censorship
Google unveils services promoting free expression
http://www.reuters.com/article/2013/10/22/google-tools-idUSL1N0IB25B20131022
UW CSEs uProxy unveiled at Google Ideas Summit in NYC
http://news.cs.washington.edu/2013/10/22/uw-cses-uproxy-unveiled-at-google-ideas-summit-in-nyc/
Get round internet censors using a friend's connection
http://www.newscientist.com/article/mg22029415.500-get-round-internet-censors-using-a-friends-connection.html

FreeDOM

Congratulations to the winners of the Madrona Prize and the Peoples Choice Awards!
http://news.cs.washington.edu/2012/10/24/congratulations-to-the-winners-of-the-madrona-prize-and-the-peoples-choice-awards/

Student Advising

- Paul Ellenbogen 2013-2014

References

Dawn Song (dawnsong@cs.berkeley.edu)
- Professor,
Computer Science Division, University of California, Berkeley

Thomas Anderson (tom@cs.washington.edu)
- Warren Francis and Wilma Kolm Bradley Chair,
  Computer Science and Engineering, University of Washington

Jon Howell (jrh@google.com)
- Software Engineer, Google

Arvind Krishnamurthy (arvind@cs.washington.edu)
- Associate Professor, Computer Science and Engineering, University of Washington

Bryan Parno (parno@cmu.edu)
- Associate Professor, Computer Science Department, Carnegie Mellon University
- Researcher, Microsoft Research

Franziska Roesner (franzi@cs.washington.edu)
- Assistant Professor, Computer Science and Engineering, University of Washington

Additional references available upon request