

## CURRICULUM VITAE OF JEDIDIAH R. CRANDALL — Updated March 2021

Arizona State University  
Biodesign Center for Biocomputation, Security and Society  
School of Computing, Informatics, and Decision Systems Engineering  
jedimaestro@asu.edu  
<https://jedcrandall.github.io>

### Education

Ph.D. Computer Science, Univ. of California at Davis, 2007.

*Thesis title: Capturing and Analyzing Internet Worms.*

B.S. Computer Science, Embry-Riddle Aeronautical University in Prescott, AZ, 2002.

### Academic Appointments

Jun. 2020—present: Arizona State University, Tempe, AZ. Associate Professor.

Jun. 2018–May 2020: The University of New Mexico, Albuquerque, NM. Professor.

Sep. 2017–August 2019: The University of New Mexico, Albuquerque, NM. Associate Chair.

2013–2018: The University of New Mexico, Albuquerque, NM. Associate Professor.

2007–2013. The University of New Mexico, Albuquerque, NM. Assistant Professor.

### Selected Honors and Awards

UNM School of Engineering Senior Faculty Research Excellence Award, 2015.

UNM Office of Graduate Studies Faculty Mentor Award, 2012.

UNM Dept. of Computer Science Qforma Lectureship, 2010–2011.

NSF CAREER Award, 2009.

### Steering Committees and Boards

USENIX Workshop on Free and Open Communications on the Internet (FOCI). (**Steering Committee member, 2014–present**)

Proceedings on Privacy Enhancing Technologies (PoPETs). (**Editorial Board member 2017–2019, 2021—note: also listed below as program committees**)

Center for Advanced Research Computing. (**Internal Advisory Board member, 2017–2019**)

New Mexico Supercomputing Challenge. (**Board of Directors member, 2014–2019**)

### Chair Positions

Fourth USENIX Workshop on Free and Open Communications on the Internet (FOCI 2014). (**Co-chair**)

Third USENIX Workshop on Free and Open Communications on the Internet (FOCI 2013). (**Co-chair**)

2014 Passive and Active Measurements Conference (PAM 2014). (**Publicity Chair**)

### **Program Committee Memberships**

Fifth Workshop on NLP for Internet Freedom (NLP4IF 2021).  
Privacy Enhancing Technologies Symposium (PETS 2021).  
Fourth Workshop on NLP for Internet Freedom (NLP4IF 2020).  
Tenth USENIX Workshop on Free and Open Communications on the Internet (FOCI 2020).  
Ninth USENIX Workshop on Free and Open Communications on the Internet (FOCI 2019).  
Second Workshop on NLP for Internet Freedom (NLP4IF 2019).  
Privacy Enhancing Technologies Symposium (PETS 2019).  
First Workshop on NLP for Internet Freedom (NLP4IF 2018).  
Privacy Enhancing Technologies Symposium (PETS 2018).  
Asian Internet Engineering Conference (AINTEC 2017).  
Seventh USENIX Workshop on Free and Open Communications on the Internet (FOCI 2017).  
17th Annual DFRWS Conference (DFRWS 2017).  
Privacy Enhancing Technologies Symposium (PETS 2017).  
Hardware and Architectural Support for Security and Privacy (HASP 2016).  
Learning from Authoritative Security Experiment Results (LASER 2016).  
16th Annual DFRWS Conference (DFRWS 2016).  
Fifth USENIX Workshop on Free and Open Communications on the Internet (FOCI 2015).  
15th Annual DFRWS Conference (DFRWS 2015).  
14th Annual DFRWS Conference (DFRWS 2014).  
2014 Symposium and Bootcamp on the Science of Security (HotSoS)  
33rd International Conference on Distributed Computing Systems (ICDCS 2013).  
13th Annual DFRWS Conference (DFRWS 2013).  
Workshop on Hardware and Architectural Support for Security and Privacy (HASP 2012).  
The IEEE International Conference on Cyber, Physical, and Social Computing (CPSCom 2012).  
Second USENIX Workshop on Free and Open Communications on the Internet (FOCI 2012).  
12th Annual DFRWS Conference (DFRWS 2012).  
32nd International Conference on Distributed Computing Systems (ICDCS 2012).  
USENIX Workshop on Free and Open Communications on the Internet (FOCI 2011).  
Conference on Security and Privacy in Communication Networks (SecureComm 2011).  
ACM Computer and Communications Security Conference (CCS 2010).  
European Workshop on System Security (EUROSEC 2010).  
IEEE Symposium on Security and Privacy (Oakland 2009).  
European Workshop on System Security (EUROSEC 2009).

## Grants

**2020–2023 Collaborative Research: CNS Core: Small: Internet-Scale Measurement of TCP/IP Implementation Weaknesses.** National Science Foundation. Joint project with Univ. of New Mexico. ASU Share: \$225,000 (PI)

**2018–2021 SaTC: CORE: Medium: Collaborative: REVELARE: A Hardware-Supported Dynamic Information Flow Tracking Framework for IoT Security and Forensics.** National Science Foundation. Joint project with Univ. of Florida and Univ. of Cincinnati. ASU/UNM Share (\$94,379 transferred to ASU from UNM): \$299,696 (PI is Daniela Oliveira)

**2015–2019 NeTS: Large: Measuring and Modeling Internet Choke Points as Threats to Online Freedom.** National Science Foundation. Subcontracts to U.C. Riverside and Arizona State University. \$1,400,000 (**I am the PI**)

**2015–2019 TWC: TTP Option: Large: Collaborative: Towards a Science of Censorship Resistance.** National Science Foundation. Joint project with U.C. Berkeley/ICSI, Princeton Univ., and Stony Brook Univ. UNM share: \$377,782 (PI is Vern Paxson)

**2012–2021 UNM Information Assurance Scholarship for Service Program.** National Science Foundation. \$423,831 (PI is Stephen Burd)

**2015–2017 DARPA-BAA-15-15 Transparent Computing (TC): FAROS: Beyond all-or-nothing DIFT via context-aware self-tuning operation.** Joint project with Univ. of Florida, Univ. of Cincinnati, and U.C. Riverside. \$1,165,250. (PI)

**2014–2018 TWC: Small: Developing Advanced Digital Forensic Tools Based on Network Stack Side Channels.** National Science Foundation. \$458,033 (PI)

**2013–2018 TWC: Medium: Collaborative: Measurement and Analysis Techniques for Internet Freedom on IP and Social Networks.** National Science Foundation. Joint project with Rice Univ. UNM share: \$610,450 (Co-PI)

**2012–2013 Analysis and Mitigation of Internet Censorship.** Intelligence Advanced Research Projects Agency. UNM share: \$202,500 (co-PI)

**2010–2014 Realizing Full-System Dynamic Information Flow Tracking via Relaxed Static Stability.** National Science Foundation. \$455,428 (PI)

**2010–2014 DARPA CRASH: Search in Co-evolutionary Adversarial Environments.** Defense Advanced Research Projects Agency. \$3,200,625 (co-PI)

**2009–2013 TC: Medium: Collaborative Research: Securing Concurrency in Modern Systems.** National Science Foundation. UNM share: \$399,991 (co-PI, joint project with UT Austin)

**2009–2014 CAREER: Internet Measurement in the Cat's Cradle of Global Internet Censorship.** National Science Foundation. \$400,000 (PI)

## Ph.D. Students Graduated

UNM: Meisam Navaki-Arefi (2020), now at Google.

UNM: Geoffrey Alexander (2019), now at Sandia National Labs.

UNM: Antonio Espinoza (2018), now a postdoctoral researcher at ASU.

UNM: Jeffrey Knockel (2018), now a Post-doctoral Fellow at the Citizen Lab in the Munk School of Global Affairs and Public Policy at the University of Toronto.

UNM: Xu Zhang (2018), now at Amazon.

UNM: Roya Ensafi (2014), now a tenure-track Assistant Professor in the Computer Science and Engineering Dept. at the University of Michigan. Before that she was a Postdoctoral Research Associate at Princeton University and a Research Fellow for the Center for Information Technology Policy.

UNM: Peiyou Song (2013), now at Google after a postdoctoral research position at Rice University.

UNM: Blake Anderson (2013), now at Cisco (Blake did most of his Ph.D. work under the supervision of Terran Lane).

UNM: Bilal Shebaro (2012), now a tenure-track faculty member at St. Edward's University.

UNM: Mohammed Al-Saleh (2011), now a tenured faculty member at the Jordan University of Science and Technology.

## PUBLICATIONS

*NOTE: acceptance rates, where known, are shown in parentheses. Student authors that I worked directly with are underlined.*

### Invited chapters

Daniela Oliveira and Jedidiah R. Crandall. "Technical Foundations of Information Systems Security." *Invited chapter in the Computing Handbook Set—Information Systems and Information Technology, Third Edition*. Volume 2, Section 7. (Editor in Chief: Alan Tucker, Volume 2 Editor: Heikki Topi).

### Journal papers

Geoffrey Alexander, Antonio Espinoza, and Jedidiah R. Crandall. "Detecting TCP/IP Connections via IPID Hash Collisions." *In the Proceedings on Privacy Enhancing Technologies (PoPETs)*. (2019) *Also listed below as a conference paper.*

Roya Ensafi, Philipp Winter, Abdullah Mueen, and Jedidiah R. Crandall. "Analyzing the Great Firewall of China Over Space and Time." *In the Proceedings on Privacy Enhancing Technologies (PoPETs)*. (2015) (20.4%) *Also listed below as a conference paper.*

Jedidiah R. Crandall, Masashi Crete-Nishihata, Jeffrey Knockel, Sarah McKune, Adam Senft, Diana Tseng, and Greg Wiseman. "Chat program censorship and surveillance in China: Tracking TOM-Skype and Sina UC." *First Monday Volume 18, Number 7, 1 July 2013*. (2013) (unknown)

Bilal Shebaro, Fernando Perez-Gonzalez, and Jedidiah R. Crandall. "Exploiting Geometrical Structure for Forensic Applications of Timing Inference Channels." *International Journal of Digital Crime and Forensics (IJDCF)*. Vol. 5, no. 1. (2013) (unknown)

Mohammed I. Al-Saleh, Antonio M. Espinoza, and Jedidiah R. Crandall. "Antivirus Performance Characterisation: System-Wide View." *IET Information Security, Volume 7, Issue 2, June 2013*, p. 126 - 133. (2013). (unknown)

Bilal Shebaro and Jedidiah R. Crandall. "Privacy-Preserving Network Flow Recording." *Digital Investigation Journal*. Vol. 8, (Aug 2011), p. S90-S100. (2011). (23%)

Bilal Shebaro, Fernando Perez-Gonzalez, and Jedidiah R. Crandall. *Digital Investigation Journal*. Vol. 7, (Aug 2010), p. S104-S113. (**Digital Investigation Journal 2010**). (41%)

J.R. Crandall, J. Brevik, S. Ye, G. Wassermann, D.A.S. de Oliveira, Z. Su, S.F. Wu, and F.T. Chong. “Putting Trojans on the Horns of a Dilemma: Redundancy for Information Theft Detection.” *Transactions on Computational Science IV: Special Issue on Security in Computing. Springer Lecture Notes in Computer Science (Springer LNCS 2009)*, Volume 5430, pages 244–262. (23%)

J.R. Crandall, F.T. Chong, and S.F. Wu. “Minos: Architectural Support for Protecting Control Data.” *ACM Transactions on Architecture and Code Optimization (ACM TACO 2006)*. Volume 3, Issue 4.

### Refereed conference and workshop publications

William J. Tolley, Beau Kujath, Mohammad Taha Khan, Narseo Vallina-Rodriguez, and Jedidiah R. Crandall. “Blind In/On-Path Attacks and Applications to VPNs.” To appear in the Proceedings of the 30th USENIX Security Symposium. (**USENIX Security 2021**). Virtual event. August, 2021.

Nikolaos Sapountzis, Ruimin Sun, Xuetao Wei, Yier Jin, Jedidiah Crandall, and Daniela Oliveira. “MITOS: Optimal Decisioning for the Indirect Flow Propagation Dilemma in Dynamic Information Flow Tracking Systems.” *In the Proceedings of the IEEE International Conference on Distributed Computing Systems. (ICDCS 2020)* Singapore.

Geoffrey Alexander, Antonio Espinoza, and Jedidiah R. Crandall. “Detecting TCP/IP Connections via IPID Hash Collisions.” *In the Proceedings of the 2019 Privacy Enhancing Technologies Symposium (PETS)*. (**PETS 2019**) Stockholm, Sweden. Also listed above as a journal paper.

Kirtus G. Leyba, Benjamin Edwards, Cynthia Freeman, Jedidiah R. Crandall, and Stephanie Forrest. “Borders and Gateways: Measuring and Analyzing National AS Chokepoints.” In the Proceedings of the second annual ACM SIGCAS Conference on Computing and Sustainable Societies. (**COMPASS 2019**) Accra, Ghana.

Daniel Riofrio, Anacaren Ruiz, Erin Sosebee, Qasim Raza, Adnan Bashir, Jed Crandall, and Ramrio Sandoval. “Presidential Elections in Ecuador: Bot Presence in Twitter.” *In the Proceedings of the Sixth International Conference on eDemocracy and eGovernment. (ICEDEG 2019)* Quito, Ecuador.

Meisam Navaki Arefi, Geoffrey Alexander, Hooman Rokham, Aokun Chen, Daniela Oliveira, Xuetao Wei, Michalis Faloutsos, and Jedidiah R. Crandall. “FAROS: Illuminating In-Memory Injection Attacks via Provenance-based Whole System Dynamic Information Flow Tracking.” *Accepted (pending shepherd approval) to the 2018 IEEE/IFIP International Conference on Dependable Systems and Networks. (DSN 2018)* Luxembourg City, Luxembourg. (28.1%)

Meisam Navaki Arefi, Geoffrey Alexander, and Jedidiah R. Crandall. “PIITracker: Automatic Tracking of Personally Identifiable Information in Windows.” *In the Proceedings of 11th European Workshop on Systems Security. (EUROSEC 2018)* Porto, Portugal. (unknown)

Xu Zhang, Jeffrey Knockel, and Jedidiah R. Crandall. “ONIS: Inferring TCP/IP-based Trust Relationships Completely Off-Path.” *In the Proceedings of IEEE INFOCOM 2018. (INFOCOM 2018)* Honolulu, Hawaii. (19.2%)

Mahdi Zamani, Jared Saia, and Jedidiah R. Crandall. “TorBricks: Blocking-Resistant Tor Bridge Distribution.” *Appeared at the 19th International Symposium on Stabilization, Safety, and Security of Distributed Systems. (SSS 2017)*. Boston, Massachusetts. (unknown)

Antonio M. Espinoza, William J. Tolley, Jedidiah R. Crandall, Masashi Crete-Nishihata, and Andrew Hilt. “Alice and Bob, who the FOCl are they?: Analysis of end-to-end encryption in the LINE messaging application.” *In the Proceedings of the 7th USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2017)*. Vancouver, Canada. (unknown)

Xu Zhang, Jeffrey Knockel, and Jedidiah R. Crandall. “High Fidelity Off-Path Round-Trip Time Measurement via TCP/IP Side Channels with Duplicate SYNs.” *In the Proceedings of IEEE GLOBECOM (GLOBECOM 2016)*. Washington, D.C. (36.7%)

Aokun Chen, Pratik Brahma, Dapeng Oliver Wu, Natalie Ebner, Brandon Matthews, Jedidiah Crandall, Xuetao Wei, Michalis Faloutsos, and Daniela Oliveira. “Cross-Layer Personalization as a First Class Citizen for Situation Awareness and Computer Infrastructure Security.” *In the Proceedings of the New Security Paradigms Workshop. (NSPW 2016)*. C Lazy U Ranch, Colorado. September 2016. (46%)

Antonio Espinoza, Jeffrey Knockel, Jedidiah R. Crandall, and Pedro Comesaña. “V-DIFT: Vector-Based Dynamic Information Flow Tracking with Application to Locating Cryptographic Keys for Reverse Engineering.” *Short paper in the Proceedings of the International Conference on Availability, Reliability and Security. (ARES 2016)*. Salzburg, Austria. August/September 2016. (24.4% was the acceptance rate for full papers, no rate was reported for short papers)

Daniela Oliveira, Jedidiah Crandall, Harry Kalodner, Nicole Morin, Megan Maher, Jesus Navarro and, Felix Emiliano. “An Information Flow-based Taxonomy to Understand the Nature of Software Vulnerabilities.” *In the Proceedings of the 31st International Conference on ICT Systems Security and Privacy Protection - Springer. (IFIP SEC 2016)*. Ghent, Belgium, May 2016. (18.6%)

Jeffrey Knockel, Masashi Crete-Nishihata, Jason Q. Ng, Adam Senft, and Jedidiah R. Crandall. “Every Rose Has Its Thorn: Censorship and Surveillance on Social Video Platforms in China.” *In the Proceedings of the 5th USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2015)* Washington, D.C. (unknown)

Jedidiah R. Crandall, Masashi Crete-Nishihata, and Jeffrey Knockel. “Forgive Us Our SYN's: Technical and Ethical Considerations for Measuring Internet Censorship.” *Workshop on Ethics in Networked Systems Research (co-located with ACM SIGCOMM'15)*. London, United Kingdom. August 2015. (unknown)

Roya Ensafi, Philipp Winter, Abdullah Mueen, and Jedidiah R. Crandall. “Analyzing the Great Firewall of China Over Space and Time.” *In the Proceedings of the 2015 Privacy Enhancing Technologies Symposium (PETS)*. Philadelphia, Pennsylvania. July 2015. (PETS 2015) (20.4%) Also listed above as a journal paper.

Xu Zhang, Jeffrey Knockel, and Jedidiah R. Crandall. “Original SYN: Finding Machines Hidden Behind Firewalls.” *In the Proceedings of IEEE INFOCOM 2015. (INFOCOM 2015)* Hong Kong. (19%)

Geoffrey Alexander and Jedidiah R. Crandall. “Off-Path Round Trip Time Measurement via TCP/IP Side Channels.” *In the Proceedings of IEEE INFOCOM 2015. (INFOCOM 2015)* Hong Kong. (19%)

Jeffrey Knockel and Jedidiah R. Crandall. “Counting Packets Sent Between Arbitrary Internet Hosts.” *In the Proceedings of the 4th USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2014)* San Diego, California. (50%)

Jedidiah R. Crandall, Roya Ensafi, and Mike Jacobi. “A Case Study in Helping Students to Covertly Eat Their Classmates.” *Invited paper at the 2014 USENIX Summit on Gaming, Games and Gamification in Security Education. (3GSE '14)* San Diego, California. (unknown)

Roya Ensafi, Jeffrey Knockel, Geoffrey Alexander, and Jedidiah R. Crandall. “Detecting Intentional Packet Drops on the Internet via TCP/IP Side Channels.” *In the Proceedings of the 2014 Passive and Active Measurements conference. (PAM 2014)* Marina del Rey, California. (31%)

Tao Zhu, David Phipps, Adam Pridgen, Jedidiah R. Crandall, and Dan S. Wallach. "The Velocity of Censorship: High-Fidelity Detection of Microblog Post Deletions." *In the Proceedings of the 22nd USENIX Security Symposium. (USENIX Security 2013)* Washington, D.C. (16%)

Peiyong Song, Anhe Shu, David Phipps, Dan Wallach, Mohit Tiwari, Jedidiah Crandall, and George Luger. "Language Without Words: A Pointillist Model for Natural Language Processing." *In the Proceedings of the 6th International Conference on Soft Computing and Intelligent Systems. (SCIS-ISIS 2012)* Kobe, Japan. (unknown)

Peiyong Song, Anhe Shu, Anyu Zhou, Dan Wallach, and Jedidiah R. Crandall. "A Pointillism Approach for Natural Language Processing of Social Media." *In the Proceedings of the 8th IEEE International Conference on Natural Language Processing and Knowledge Engineering. (IEEE NLP-KE 2012)* Hefei, China. (30%)

Jeffrey Knockel and Jedidiah R. Crandall. "Protecting Free and Open Communications on the Internet Against Man-in-the-Middle Attacks on Third-Party Software: We're FOCI'd." *In the Proceedings of the 2nd USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2012)* Bellevue, Washington. (unknown)

Nicholas Aase, Jedidiah R. Crandall, Álvaro Díaz, Jeffrey Knockel, Jorge Ocaña Molinero, Jared Saia, Dan Wallach, and Tao Zhu. "Whiskey, Weed, and Wukan on the World Wide Web: On Measuring Censors' Resources and Motivations." *In the Proceedings of the USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2012)* Bellevue, Washington. (unknown)

Daniela Oliveira and Jedidiah R. Crandall. "Holographic Vulnerability Studies: Vulnerabilities as Fractures in Interpretation as Information Flows Across Abstraction Boundaries." *In the Proceedings of the New Security Paradigms Workshop. (NSPW 2012)* (40%)

Roya Ensafi, Mike Jacobi, and Jedidiah R. Crandall. "Students Who Don't Understand Information Flow Should be Eaten: An Experience Paper." *In the Proceedings of the 5th USENIX Workshop on Cyber Security Experimentation and Test. (CSET 2012)* (48%)

Antonio M. Espinoza and Jedidiah R. Crandall. "Work-in-Progress: Automated Named Entity Extraction for Tracking Censorship of Current Events." *In the Proceedings of the USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2011)* (59%)

Jeffrey Knockel, Jedidiah R. Crandall, and Jared Saia. "Three Researchers, Five Conjectures: An Empirical Analysis of TOM-Skype Censorship and Surveillance." *In the Proceedings of the USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2011)* (59%)

Bilal Shebaro and Jedidiah R. Crandall. "Privacy-Preserving Network Flow Recording." *In the Proceedings of the DFRWS 2011 Annual Conference. (DFRWS 2011)*. (23%)

Mohammed I. Al-Saleh and Jedidiah R. Crandall. "Application-Level Reconnaissance: Timing Channel Attacks Against Antivirus Software." *In the Proceedings of the 4th USENIX Workshop on Large-Scale Exploits and Emergent Threats. (LEET 2011)* (44%)

Mohammed I. Al-Saleh and J.R. Crandall. "On Information Flow for Intrusion Detection: What if Accurate Full-system Dynamic Information Flow Tracking Was Possible?." *In the Proceedings of the New Security Paradigms Workshop. (NSPW 2010)*. (44%)

Roya Ensafi, Jong C. Park, Deepak Kapur, and Jedidiah R. Crandall. "Idle Port Scanning and Non-interference Analysis of Network Protocol Stacks Using Model Checking." *In the Proceedings of the 19th USENIX Security Symposium. (USENIX Security 2010)* (15%)

Bilal Shebaro, Fernando Perez-Gonzalez, and Jedidiah R. Crandall. "Leaving Timing Channel Fingerprints in Hidden Service Log Files." *In the Proceedings of the DFRWS 2010 Annual Conference. (DFRWS 2010)*. (41%)

Jong C. Park and Jedidiah R. Crandall. "Empirical Study of a National-Scale Distributed Intrusion Detection System: Backbone-Level Filtering of HTML Responses in China." *In the Proceedings of the 30th International Conference on Distributed Computing Systems. (ICDCS 2010)*. (14%)

Jedidiah R. Crandall, Roya Ensafi, Stephanie Forrest, Joshua Ladau, and Bilal Shebaro. "The Ecology of Malware." *In the Proceedings of the New Security Paradigms Workshop (NSPW 2008)*. (32%)

Daniela A.S. de Oliveira, Jedidiah R. Crandall, Gary Wassermann, Shaozhi Ye, Felix Wu, Zhendong Su, and Frederic T. Chong. "Bezoar: Automated Virtual Machine-based Full-System Recovery from Control-Flow Hijacking Attacks." *In the Proceedings of the 2008 IEEE/IFIP Network Operations and Management Symposium (NOMS 2008)*. (29%)

Ryan Iwahashi, Daniela Oliveira, S. Felix Wu, Jedidiah Crandall, Young-Jun Heo, Jin-Tae Oh, and Jong-Soo Jang. "Towards Automatically Generating Double-Free Vulnerability Signatures Using Petri Nets." *In the Proceedings of the 11th Information Security Conference (ISC 2008)*. (29%)

Jedidiah R. Crandall, Daniel Zinn, Michael Byrd, Earl Barr, and Rich East. "ConceptDoppler: A Weather Tracker for Internet Censorship." *In the Proceedings of the 14th ACM Conference on Computer and Communications Security (CCS 2007)*. (18%)

J.R. Crandall, G. Wassermann, D.A.S. de Oliveira, Z. Su, S.F. Wu, and F.T. Chong. "Temporal Search: Detecting Hidden Malware Timebombs with Virtual Machines." *In the Proceedings of the Twelfth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2006)*. (22%)

J.R. Crandall, Z. Su, S.F. Wu, and F.T. Chong. "On Deriving Unknown Vulnerabilities from Zero-Day Polymorphic and Metamorphic Worm Exploits." *In the proceedings of the 12th ACM Conference on Computer and Communications Security (CCS 2005)*. (15%)

J.R. Crandall, S.F. Wu, and F.T. Chong. "Experiences Using Minos as A Tool for Capturing and Analyzing Novel Worms for Unknown Vulnerabilities." *GI/IEEE SIG SIDAR Conference on Detection of Intrusions and Malware and Vulnerability Assessment (DIMVA 2005)*. *Springer Lecture Notes in Computer Science*. (27%)

Daniela Oliveira and Jedidiah R. Crandall. "Holographic Vulnerability Studies: Vulnerabilities as Fractures in Interpretation as Information Flows Across Abstraction Boundaries." *In the Proceedings of the New Security Paradigms Workshop. (NSPW 2012)* Bertinoro, Italy. (40%)

Roya Ensafi, Mike Jacobi, and Jedidiah R. Crandall. "Students Who Don't Understand Information Flow Should be Eaten: An Experience Paper." *In the Proceedings of the 5th USENIX Workshop on Cyber Security Experimentation and Test. (CSET 2012)* Bellevue, Washington. (48%)

Antonio M. Espinoza and Jedidiah R. Crandall. "Work-in-Progress: Automated Named Entity Extraction for Tracking Censorship of Current Events." *In the Proceedings of the USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2011)* San Francisco, California. (59%)

Jeffrey Knockel, Jedidiah R. Crandall, and Jared Saia. "Three Researchers, Five Conjectures: An Empirical Analysis of TOM-Skype Censorship and Surveillance." *In the Proceedings of the USENIX Workshop on Free and Open Communications on the Internet. (FOCI 2011)* San Francisco, California. (59%)



Bilal Shebaro and Jedidiah R. Crandall. "Privacy-Preserving Network Flow Recording." *In the Proceedings of the DFRWS 2011 Annual Conference. (DFRWS 2011)*. New Orleans, Louisiana. (23%)

Mohammed I. Al-Saleh and Jedidiah R. Crandall. "Application-Level Reconnaissance: Timing Channel Attacks Against Antivirus Software." *In the Proceedings of the 4th USENIX Workshop on Large-Scale Exploits and Emergent Threats. (LEET 2011)* Boston, Massachusetts. (44%)

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Roya Ensafi, Jong C. Park, Deepak Kapur, and Jedidiah R. Crandall. "**Idle Port Scanning and Non-interference Analysis of Network Protocol Stacks Using Model Checking.**" *In the Proceedings of the 19th USENIX Security Symposium. (USENIX Security 2010)* Washington, D.C. (15%)

Bilal Shebaro, Fernando Perez-Gonzalez, and Jedidiah R. Crandall. "Leaving Timing Channel Fingerprints in Hidden Service Log Files." *In the Proceedings of the DFRWS 2010 Annual Conference. (DFRWS 2010)*. Portland, Oregon. (41%)

Jong C. Park and Jedidiah R. Crandall. "Empirical Study of a National-Scale Distributed Intrusion Detection System: Backbone-Level Filtering of HTML Responses in China." *In the Proceedings of the 30th International Conference on Distributed Computing Systems. (ICDCS 2010)*. Genoa, Italy. (14%)

Mohammed I. Al-Saleh, Patrick B. Bridges, and Jedidiah R. Crandall. "Architectural Support for Securing Sensor Networks Against Remote Attacks." *In the Proceeding of the ISCA First International Conference on Sensor Networks and Applications (SNA 2009)*. San Francisco, California. (71%)

Jedidiah R. Crandall, Roya Ensafi, Stephanie Forrest, Joshua Ladau, and Bilal Shebaro. "The Ecology of Malware." *In the Proceedings of the New Security Paradigms Workshop (NSPW 2008)*. Lake Tahoe, California. (32%)

Daniela A.S. de Oliveira, Jedidiah R. Crandall, Gary Wassermann, Shaozhi Ye, Felix Wu, Zhendong Su, and Frederic T. Chong. "Bezoar: Automated Virtual Machine-based Full-System Recovery from Control-Flow Hijacking Attacks." *In the Proceedings of the 2008 IEEE/IFIP Network Operations and Management Symposium (NOMS 2008)*. Bahia, Brazil. (29%)

Ryan Iwahashi, Daniela Oliveira, S. Felix Wu, Jedidiah Crandall, Young-Jun Heo, Jin-Tae Oh, and Jong-Soo Jang. "Towards Automatically Generating Double-Free Vulnerability Signatures Using Petri Nets." *In the Proceedings of the 11<sup>th</sup> Information Security Conference (ISC 2008)*. Taipei, Taiwan. (29%)

Jedidiah R. Crandall, Daniel Zinn, Michael Byrd, Earl Barr, and Rich East. "ConceptDoppler: A Weather Tracker for Internet Censorship." *In the Proceedings of the 14<sup>th</sup> ACM Conference on Computer and Communications Security (CCS 2007)*. Alexandria, Virginia. (18%)

J.R. Crandall, G. Wassermann, D.A.S. de Oliveira, Z. Su, S.F. Wu, and F.T. Chong. "Temporal Search: Detecting Hidden Malware Timebombs with Virtual Machines." *In the Proceedings of the Twelfth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2006)*. San Jose, California. (22%)

J.R. Crandall, Z. Su, S.F. Wu, and F.T. Chong. "On Deriving Unknown Vulnerabilities from Zero-Day Polymorphic and Metamorphic Worm Exploits." *In the proceedings of the 12<sup>th</sup> ACM Conference on Computer and Communications Security (CCS 2005)*. Alexandria, Virginia. (15%)

J.R. Crandall, S.F. Wu, and F.T. Chong. "Experiences Using Minos as A Tool for Capturing and Analyzing Novel Worms for Unknown Vulnerabilities." *GI/IEEE SIG SIDAR Conference on Detection of Intrusions and Malware and Vulnerability Assessment (DIMVA 2005)*. Springer Lecture Notes in Computer Science. Vienna, Austria. (27%)

J.R. Crandall and F.T. Chong. "Minos: Control Data Attack Prevention Orthogonal to Memory Model." *In the Proceedings of the 37<sup>th</sup> International Symposium on Microarchitecture (MICRO 2004)*. Portland, Oregon. (18%)

J.R. Crandall and F.T. Chong. "A Security Assessment of the Minos Architecture." *In the Proceedings of the Workshop on Architectural Support for Security and Anti-virus (WASSA 2004)*. Boston, Massachusetts. (unknown)

J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, L. Jones IV, D. Franklin, V. Akella, and F.T. Chong. "Synchrosalar: A Multiple Clock Domain, Power-Aware, Tile-Based Embedded Processor." *In the Proceedings of the 31<sup>st</sup> International Symposium on Computer Architecture (ISCA 2004)*. San Diego, California. (14%)