

## Jay Ligatti

### Contact Information

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### Research Areas

Software security and programming languages

### Appointments

*University of South Florida*

Professor, Department of Computer Science and Engineering (2018-present)

Associate Professor, Department of Computer Science and Engineering (2012-2018)

Assistant Professor, Department of Computer Science and Engineering (2006-2012)

### Education

*Princeton University* (2001-2006)

Degrees: Ph.D., Computer Science (2006); M.A., Computer Science (2003)

Dissertation: *Policy Enforcement via Program Monitoring*

Adviser: David Walker

*University of South Carolina* (1997-2001)

Degrees: B.S., Computer Science (2001); B.M., Music Composition (2001)

Honors: summa cum laude, Phi Beta Kappa, honors college, piano perf. certificate

Advisers: John Kenneth Adams, Reginald Bain

### Awards and Honors

- Distinguished Paper Award at the 2021 *USENIX Symposium on Usable Privacy and Security (SOUPS)*, for [13]
- USF Excellence in Innovation Award, 2017
- ACM Senior Member, 2016
- Test of Time Award at the 2015 *ACM Conference on Computer and Communications Security (CCS)*, for Control-Flow Integrity [34]
  - In 2016 Intel [announced](#) adoption of CFI for future processors.
- USF Outstanding Research Achievement Award, 2009
- NSF Faculty Early Career Development (CAREER) Award, 2008
- Best-paper award at the 2007 *ACM Conference on Programming Language Design and Implementation (PLDI)*, for [32]
- CCS'05 paper [34] was invited to appear as TISSEC journal article [8]
- FCS'02 paper [41] was invited to appear as IJIS journal article [12]

## Refereed Journal Publications

- [1] Far Proximity Identification in Wireless Systems. Tao Wang, Jian Weng, Jay Ligatti, and Yao Liu. *IEEE Transactions on Dependable and Secure Computing (TDSC)*. Vol 18, No 5, pp 2403-2418. IEEE, September/October 2021.
- [2] Cybersecurity Vulnerabilities in Mobile Fare Payment Applications: A Case Study. Kevin Dennis, Maxat Alibayev, Sean J. Barbeau, and Jay Ligatti. *Transportation Research Record: Journal of the Transportation Research Board (TRR)*. Vol 2674, No 11, pp 616-624. Sage Publishing, November 2020.
- [3] On Subtyping-Relation Completeness, with an Application to Iso-Recursive Types. Jay Ligatti, Jeremy Blackburn, and Michael Nachtigal. *ACM Transactions on Programming Languages and Systems (TOPLAS)*. Vol 39, No 1, Article 4, pp 1-36. ACM Press, March 2017.
- [4] Design of Adiabatic Dynamic Differential Logic for DPA-Resistant Secure Integrated Circuits. Matthew Morrison, Nagarajan Ranganathan, and Jay Ligatti. *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*. Vol 23, No 8, pp 1381-1389. IEEE, August 2015.
- [5] Modeling Runtime Enforcement with Mandatory Results Automata. Egor Dolzhenko, Jay Ligatti, and Srikar Reddy. *International Journal of Information Security (IJIS)*. Vol 14, No 1, pp 47-60. Springer-Verlag, February 2015.
- [6] A Location-based Policy-specification Language for Mobile Devices. Joshua Finnis, Nalin Saigal, Adriana Iamnitchi, and Jay Ligatti. *Pervasive and Mobile Computing (PMC)*. Vol 8, No 3, pp 402-414. Elsevier, June 2012.
- [7] PoliSeer: A Tool for Managing Complex Security Policies. Daniel Lomsak and Jay Ligatti. *Journal of Information Processing (JIP)*. Vol 19, pp 292-306. Information Processing Society of Japan, July 2011.
- [8] Control-Flow Integrity: Principles, Implementations, and Applications. Martín Abadi, Mihai Budiu, Úlfar Erlingsson, and Jay Ligatti. *ACM Transactions on Information and System Security (TISSEC)*, Vol 13, No 1, Article 4, pp 1-40. ACM Press, October 2009.
- [9] Composing Expressive Run-time Security Policies. Lujo Bauer, Jay Ligatti, and David Walker. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, Vol 18, No 3, pp 1-43. ACM Press, May 2009.
- [10] Run-Time Enforcement of Nonsafety Properties. Jay Ligatti, Lujo Bauer, and David Walker. *ACM Transactions on Information and System Security (TISSEC)*, Vol 12, No 3, pp 1-41. ACM Press, January 2009.
- [11] A Type-theoretic Interpretation of Pointcuts and Advice. Jay Ligatti, David Walker, and Steve Zdancewic. In Pascal Fradet and Ralf Lämmel, editors, *Science of Computer Programming (SCP): Special Issue on Foundations of Aspect-Oriented Programming*, Vol 63, No 3, pp 240-266. Elsevier, December 2006.

- [12] Edit Automata: Enforcement Mechanisms for Run-time Security Policies. Jay Ligatti, Lujo Bauer, and David Walker. *International Journal of Information Security (IJIS)*, Vol 4, No 1-2, pp 2-16. Springer-Verlag, February 2005.

### **Selective Conference Publications**

- [13] An Analysis of the Role of Situated Learning in Starting a Security Culture in a Software Company. Anwesh Tuladhar, Daniel Lende, Jay Ligatti, and Xinming Ou. Proceedings of the *Usenix Symposium on Usable Privacy and Security (SOUPS)*, August 2021.
- [14] Through the Lens of Code Granularity: A Unified Approach to Security Policy Enforcement. Shamaria Engram and Jay Ligatti. Proceedings of the *IEEE Conference on Applications, Information and Network Security (AINS)*, November 2020.
- [15] An Ethnographic Understanding of Software (In)Security and a Co-Creation Model to Improve Secure Software Development. Hernan Palombo, Armin Tabari, Daniel Lende, Jay Ligatti, and Xinming Ou. Proceedings of the *Usenix Symposium on Usable Privacy and Security (SOUPS)*, August 2020.
- [16] An Evaluation of the Power Consumption of Coauthentication as a Continuous User Authentication Method in Mobile Systems. Brandon Corn, Ashley Ruiz, Alfredo Perez, Cagri Cetin, and Jay Ligatti. Proceedings of the *Annual ACM Southeast Conference (ACMSE)*, April 2020.
- [17] Stream-Monitoring Automata. Hernan Palombo, Egor Dolzhenko, Jay Ligatti, and Hao Zheng. Proceedings of the *9<sup>th</sup> International Conference on Software and Computer Applications (ICSCA)*, February 2020.
- [18] PoCo: A Language for Specifying Obligation-Based Policy Compositions. Danielle Ferguson, Yan Albright, Daniel Lomsak, Tyler Hanks, Kevin Orr, and Jay Ligatti. Proceedings of the *9<sup>th</sup> International Conference on Software and Computer Applications (ICSCA)*, February 2020.
- [19] SQL-Identifier Injection Attacks. Cagri Cetin, Dmitry Goldgof, and Jay Ligatti. Proceedings of the *IEEE Conference on Communications and Network Security (CNS)*, June 2019.
- [20] A Dual-Task Interference Game-Based Experimental Framework for Comparing the Usability of Authentication Methods. Jean-Baptiste Subils, Joseph Perez, Peiwei Liu, Shamaria Engram, Cagri Cetin, Dmitry Goldgof, Natalie Ebner, Daniela Oliveira, and Jay Ligatti. Proceedings of the *IEEE International Conference on Human System Interaction (HSI)*, June 2019.
- [21] Coauthentication. Jay Ligatti, Cagri Cetin, Shamaria Engram, Jean-Baptiste Subils, and Dmitry Goldgof. Proceedings of the *ACM Symposium on Applied Computing (SAC)*, April 2019.

- [22] Cybersecurity in Public Transportation: A Literature Review. Kevin Dennis, Maxat Alibayev, Sean Barbeau, and Jay Ligatti. Proceedings of the 98<sup>th</sup> *Transportation Research Board Annual Meeting (TRB)*, January 2019.
- [23] A Theory of Gray Security Policies. Donald Ray and Jay Ligatti. Proceedings of the *European Symposium on Research in Computer Security (ESORICS)*, September 2015.
- [24] Defining Injection Attacks. Donald Ray and Jay Ligatti. Proceedings of the *International Information Security Conference (ISC)*, October 2014.
- [25] Fingerprinting Far Proximity from Radio Emissions. Tao Wang, Yao Liu, and Jay Ligatti. Proceedings of the *European Symposium on Research in Computer Security (ESORICS)*, September 2014.
- [26] Defining Code-injection Attacks. Donald Ray and Jay Ligatti. Proceedings of the *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL)*, January 2012.
- [27] A Theory of Runtime Enforcement, with Results. Jay Ligatti and Srikar Reddy. Proceedings of the *European Symposium on Research in Computer Security (ESORICS)*, September 2010.
- [28] A Packet-classification Algorithm for Arbitrary Bitmask Rules, with Automatic Time-space Tradeoffs. Jay Ligatti, Josh Kuhn, and Chris Gage. Proceedings of the 19<sup>th</sup> *IEEE International Conference on Computer Communication Networks (ICCCN)*, August 2010.
- [29] PoliSeer: A Tool for Managing Complex Security Policies. Daniel Lomsak and Jay Ligatti. Proceedings of the *International Conference on Trust Management (IFIP-TM)*, June 2010.
- [30] Inline Visualization of Concerns. Nalin Saigal and Jay Ligatti. Proceedings of the *ACIS International Conference on Software Engineering Research, Management, and Applications (SERA)*, December 2009.
- [31] LoPSiL: A Location-based Policy-specification Language. Jay Ligatti, Billy Rickey, and Nalin Saigal. Proceedings of the *International ICST Conference on Security and Privacy in Mobile Information and Communication Systems (MobiSec)*, June 2009.
- [32] Fault-tolerant Typed Assembly Language. Frances Perry, Lester Mackey, George Reis, Jay Ligatti, David August, and David Walker. Proceedings of the *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, June 2007.
- [33] Static Typing for a Faulty Lambda Calculus. David Walker, Lester Mackey, Jay Ligatti, George Reis, and David August. Proceedings of the *ACM SIGPLAN International Conference on Functional Programming (ICFP)*, September 2006.

- [34] Control-Flow Integrity: Principles, Implementations, and Applications. Martín Abadi, Mihai Budiu, Úlfar Erlingsson, and Jay Ligatti. Proceedings of the ACM SIGSAC *Conference on Computer and Communications Security (CCS)*, November 2005.
- [35] A Theory of Secure Control Flow. Martín Abadi, Mihai Budiu, Úlfar Erlingsson, and Jay Ligatti. Proceedings of the *7th International Conference on Formal Engineering Methods (ICFEM)*, November 2005.
- [36] Enforcing Non-safety Security Policies with Program Monitors. Jay Ligatti, Lujo Bauer, and David Walker. Proceedings of the *10th European Symposium on Research in Computer Security (ESORICS)*, September 2005.
- [37] Composing Security Policies with Polymer. Lujo Bauer, Jay Ligatti, and David Walker. Proceedings of the ACM SIGPLAN *Conference on Programming Language Design and Implementation (PLDI)*, June 2005.
- [38] Types and Effects for Non-interfering Program Monitors. Lujo Bauer, Jarred Ligatti, and David Walker. In M. Okada, B. Pierce, A. Scedrov, H. Tokuda, and A. Yonezawa, editors, *Lecture Notes in Computer Science: Software Security—Theories and Systems (Revised Papers of the 2002 Mext-NSF-JSPS International Symposium)*, Vol 2609, pp 154-171. Springer-Verlag, November 2003.
- [39] A Theory of Aspects. David Walker, Steve Zdancewic, and Jay Ligatti. Proceedings of the ACM SIGPLAN *International Conference on Functional Programming (ICFP)*, August 2003.

### **Workshop Publications**

- [40] Enforcing More with Less: Formalizing Target-aware Run-time Monitors. Yannis Mallios, Lujo Bauer, Dilsun Kaynar, and Jay Ligatti. Proceedings of the *International Workshop on Security and Trust Management (STM)* (associated with ESORICS), September 2012.
- [41] More Enforceable Security Policies. Lujo Bauer, Jarred Ligatti, and David Walker. Proceedings of the *Foundations of Computer Security Workshop (FCS)* (associated with LICS), July 2002.

### **Ph.D. Thesis**

- [42] Policy Enforcement via Program Monitoring. Jarred Adam Ligatti. PhD thesis, Princeton University, June 2006.

### **Patents**

- [43] Systems and Methods for Challengeless Coauthentication. Jay Ligatti. US Patent 10,367,817. July 2019.
- [44] Systems and Methods for Generating Symmetric Cryptographic Keys. Jay Ligatti, Cagri Cetin, Shamaria Engram, Dmitry Goldgof. US Patent 10,298,391. May 2019.

- [45] Systems and Methods for Generating Symmetric Cryptographic Keys. Jay Ligatti, Cagri Cetin, Shamaria Engram, Dmitry Goldgof. US Patent 10,291,403. May 2019.
- [46] System and Methods for Authentication using Multiple Devices. Jay Ligatti, Dmitry Goldgof, Cagri Cetin, Jean-Baptiste Subils. US Patent 9,659,160. May 2017.
- [47] Adiabatic Dynamic Differential Logic for Differential Power Analysis Resistant Secure Integrated Circuits. Matthew Morrison, Jay Ligatti, and Nagarajan Ranganathan. US Patent 9,531,384. December 2016.
- [48] Systems and Methods for Anonymous Authentication using Multiple Devices. Jay Ligatti, Dmitry Goldgof, Cagri Cetin, Jean-Baptiste Subils. US Patent 9,380,058. June 2016.
- [49] Software security based on control flow integrity. Martín Abadi, Mihai Budiu, Úlfar Erlingsson, Jay Ligatti. US Patent 7,577,992. August 2009.
- [50] Software memory access control. Martín Abadi, Mihai Budiu, Úlfar Erlingsson, Jay Ligatti. US Patent 7,337,291. February 2008.

#### **Patent Applications**

- Systems and Methods for Authentication Using Authentication Votes. Jay Ligatti and Dmitry Goldgof. US Patent Application 15/598,974.

#### **Licensing**

- The invention disclosed in US Patent 9,659,160 (System and Methods for Authentication using Multiple Devices) has been licensed nonexclusively.

#### **Expert Witness Experience**

- *Ericsson, Inc. et al v. TCL Communication Technology Holdings, Ltd. et al*, Case Number 2:15-cv-00011-RSP (July-December 2017)
  - Studied case documents, wrote and submitted expert and rebuttal reports, prepared and traveled for deposition.
- *BlackBerry Limited v. BLU Products, Inc.*, Case Number 16-23535-CIV-MORENO (December 2016-January 2017)
  - Studied case documents and drafted an expert report.
- *Industrial Engineering & Development et al v. Static Control Components*, Case Number 8:12-cv-691-T-24-MAP (November 2012-November 2014)
  - Studied documents, wrote expert and rebuttal reports, was deposed, and testified in federal court on technologies and patents related to access controls in printing systems.
- *John Sheppard et al v. Hillsborough County Sheriff's Office* (Nov-Dec 2012)
  - Wrote programs to obtain and analyze information from personnel databases.

## Industrial Experience

- *CACI* (March-July, 2012)  
Consultant on software security.
- *Microsoft Research* (Summer 2003)  
Created CFI (control-flow integrity) enforcement and proved its soundness.
- *Medical Software and Computer Systems* (Summers 2000-2001, Winter 2004)  
Software-security consultant; software engineer.

## Teaching Experience

*University of South Florida* [including number of students who completed each course]  
(initial enrollments were typically 20-80% higher than the final enrollments shown here)

- *Secure Coding (CNT 4419)*: Fall 2021 [90], 2020 [42], 2019 [39], and 2018 [32]
- *Compilers (COP 4620)*: Spring 2021 [30], 2020 [14]; Fall 2017 [25], 2016 [19], 2015 [14], 2013 [24], 2011 [23], 2009 [13], and 2007 [21]
- *Compilers (COP 6625)*: Spring 2020 [10]; Fall 2017 [5], 2016 [7], 2015 [9], 2013 [14], 2011 [11], 2009 [14], and 2007 [12]
- *Programming Languages (COP 4020)*: Spring 2019 [22], 2018 [20], 2017 [16], 2016 [17]; Fall 2014 [16], 2012 [23], 2010 [13], and 2008 [16]
- *Programming Languages (COP 6021)*: Spring 2019 [4], 2018 [4], 2017 [7], 2016 [7]; Fall 2014 [11], 2012 [8], and 2010 [14]
- *Foundations of Software Security (CIS 6373)*: Spring 2021 [6]; Fall 2019 [9]; Spring 2019 [4], 2018 [10], 2017 [11], 2016 [10], 2015 [9], 2014 [24], 2013 [15], 2012 [22], 2010 [19], 2008 [10], and 2007 [13]
- *Advanced Programming Languages (CIS 4930)*: Spring 2015 [3] and 2011 [2]
- *Advanced Programming Languages (CIS 6930)*: Spring 2015 [11] and 2011 [11]
- *Operating Systems (COP 4600)*: Fall 2006 [44]
- *Independent Study (COP 4900 & 6900)*: (excluding my own research advisees)  
Spring 2021 [1], Summer 2020 [2], Spring 2020 [3], Summer 2019 [2], Spring 2019 [2], Summer 2018 [1], Summer 2017 [2], Spring 2017 [2], Fall 2016 [3], Summer 2016 [6], Spring 2016 [1], Spring 2015 [2], Fall 2014 [2], Summer 2014 [3], Spring 2014 [4], Fall 2013 [3], Summer 2013 [3], Spring 2013 [2], Fall 2012 [1], Summer 2012 [1], Spring 2012 [2], Fall 2011 [1], Summer 2011 [4], Spring 2011 [2], Fall 2010 [1], Spring 2010 [5], Summer 2009 [3], Spring 2009 [2], Fall 2008 [1], Summer 2008 [4], Spring 2008 [4], Fall 2007 [2], Summer 2007 [2], Spring 2007 [7]
- *Industry Internship (CIS 6946, IDS 3947, and CIS 4940)*: Fall 2020 [1], Summer 2020 [2], Summer 2019 [3], Summer 2018 [2], Fall 2017 [1], Summer 2017 [1], Spring 2017 [1], Fall 2016 [2], Summer 2016 [2], Spring 2016 [1], Spring 2015 [1], Spring 14 [1], and Summer 13 [1]

*Princeton University* (2001-2006)

- Teaching assistant for *Compiling Techniques (COS 320)*: Spring 2003 and 2006
- Preceptor (section lecturer) for *General Computer Science (COS 126)*: Fall 2002

## **Postdoc Supervised**

- Donald Ray (2016)

## **Research Students Advised**

### *Ph.D. Students:*

- Parisa Momeni (2021-present)
- Kevin Dennis (2018-present)
- Shamaria Engram (2015-2020)
- Yan Albright (2014-2020)
- Hernan Palombo (2013-2020)
- Danielle Ferguson (2012-2020)
- Jean-Baptiste Subils (2014-2019)
- Cagri Cetin (2014-2019)
- Donald Ray (2011-2016)
- Daniel Lomsak (2008-2013)
- Nalin Saigal (2006-2011)

### *Master's Students:*

- Michael Quintero (2015-2017)
- Ivory Hernandez (2015-2017)
- Jacob Venne (2016-2017)
- Kimberly Bursum (2015-2017)
- Bader Albassam (2015-2016)
- Clayton Whitelaw (2014-2015)
- Cory Juhlin (2013-2015)
- Grant Smith (2013-2014)
- Zachary Carter (2010-2012)
- Stan Naspinski (2010-2011)
- Matt Spaulding (2010-2011)
- Brandy Eyers (2009-2011)
- Josh Kuhn (2009-2011)
- Srikar Reddy (2007-2009)

### *REU Students:*

- Molly Feldmann (Summer 2018)
- Shaughn Seepaul (Summer 2018)
- Shelsa Marcel (Summer 2013)
- Bader AlBassam (Fall 2012-Fall 2013)
- Jesse Squires (Summer 2011)
- Matt LaDuca (Summer 2011)
- DaShawn Matias (Fall 2010)
- Edwin Martinez Avila (Summer 2010)
- Robert Donatto (Fall 2009)
- Billy Rickey (Summer 2007)
- Humberto Gonzalez (Summer 2007)



*USF Honors College Thesis Students:*

- Elijah Malaby (Fall 2018)
- Kyle Peters (Fall 2018)
- Edwin Peguero (Fall 2015)
- Thomas Dietert (Fall 2015)
- William Seed (Spring 2014)
- Bader Albassam (Spring 2014)
- Jonathan Palmer (Fall 2010)
- Donald Ray (Fall 2010)
- Bryan Hill (Spring 2009)
- Vincent Newman (Spring 2008)
- Amin Astaneh (Spring 2007)

**Thesis Committees (besides those of my own students)**

- Matthew Lewandowski, Ph.D., USF, 2021
- Zhengping Luo, Ph.D., USF, 2021
- Rouzbeh Behnia, Ph.D., USF, 2021
- Thang Hoang, Ph.D., USF, 2020
- Nazli Siasi, Ph.D., USF (Electrical Engineering), 2020
- Ahmad Alagil, Ph.D., USF, 2020
- Efe Ulas Akay Seyitoglu, M.S., USF, 2020
- Mohammed Hafez, Ph.D., USF (Electrical Engineering), 2019
- Daniel Cruz, Ph.D., USF (Mathematics), 2019
- John Theado, Ph.D., USF (Mathematics), 2019
- Srivarsha Polnati, M.S., USF, 2019
- Xiaolong Wang, Ph.D., USF, 2018
- Yuping Li, Ph.D., USF, 2018
- Fengguo Wei, Ph.D., USF, 2018
- Song Fang, Ph.D., USF, 2018
- Gregory Churchill, Ph.D., USF (Mathematics), 2017
- Pubudu Kaluarachchilage, Ph.D., USF (Mathematics), 2017
- Sathya Sundaramurthy, Ph.D., USF, 2017
- Santosh Aditham, Ph.D., USF, 2017
- Ioannis (Yannis) Mallios, Ph.D., Carnegie Mellon University, 2016
- Nagalaxmi Yenuganti, M.S., USF, 2016
- Hari Jonnalagadda, M.S., USF, 2016
- Ryan Wheeler, M.S., USF, 2015
- Jae-Won Jang, M.S., USF, 2015
- Jeremy Blackburn, Ph.D., USF, 2014
- Egor Dolzhenko, Ph.D., USF (Mathematics), 2013
- Matthew Lewandowski, M.S., USF, 2013
- Christopher Bell, M.S., USF, 2013
- Nikolai Samteladze, M.S., USF, 2013
- Ismail Butun, Ph.D., USF (Electrical Engineering), 2013

- Jill Dizona, Ph.D., USF (Mathematics), 2012
- Nicolas Kourtellis, Ph.D., USF 2012
- Mehrgan Mostowfi, M.S., USF, 2010
- Paul Anderson, M.S., USF, 2010
- Konstantinos Dalamagkidis, Ph.D., USF, 2009
- Tine Verhanneman, Ph.D., Katholieke Universiteit Leuven, 2007

### Selected Talks

- *Coauthentication*. Defense Innovation Technology Acceleration Challenges Conference (Tampa, 2017)
- *A Technique for Proving Subtyping Completeness, with an Application to Iso-recursive Types*. ACM SIGPLAN Workshop on Types in Language Design and Implementation (Philadelphia, 2012)
- *A Theory of Runtime Enforcement, with Results*. European Symposium on Research in Computer Security (Athens, 2010)
- *Modeling Enforcement Mechanisms with Security Automata*. USF Discrete Mathematics Seminar (Tampa, 2010)
- *An Introduction to Cryptography for Homeland Security*. USF Institute for Safety Security Rescue Technology (iSSRt) Distinguished Lecture (Tampa, 2008)
- *Coping with Runtime-Policy Complexity*. International Workshop on Run Time Enforcement for Mobile and Distributed Systems (Dresden, 2007)
- *Runtime Software Monitoring*. Carnegie Mellon University CyLab (Pittsburgh, 2007)
- *Monitoring Software to Enforce Run-time Policies*. Microsoft Research-INRIA Joint Centre (Paris, 2007)
- *Polymer: A Language and System for Specifying Complex, Modular Run-time Policies*. Katholieke Universiteit Leuven, Belgium (Leuven, 2007)
- *An Underappreciated Software-verification Technique*. IEEE-CS's USF-student-chapter meeting (Tampa, 2007)
- *Language-based Security*. ACM's USF-student-chapter meeting (02/2007)
- *New Research in Computer Security*. ACM's USF-student-chapter meeting (10/2006)
- *Enforcing Security Policies with Run-time Program Monitors*. Reservoir Labs-NYC (03/2006), University of Texas-Arlington (03/2006), Florida International University (03/2006), University of South Florida (02/2006), Kansas State University (02/2006)
- *Composing Security Policies with Polymer*. ACM SIGPLAN Conference on Programming Language Design and Implementation (Chicago, 2005)
- *Enforcing Non-safety Security Policies with Program Monitors*. European Symposium on Research in Computer Security (Milan, 2005)

### Service

#### *Program committees:*

- IEEE/ACIS International Conference on Big Data, Cloud Computing, and Data Science Engineering (*BCD*), 2021

- IEEE Conference on Communications and Network Security (*CNS*), 2020-2021
- International Conference on Computational Science/Intelligence & Applied Informatics (*CSII*), 2021
- International Symposium on Cyberspace Safety and Security (*CSS*), 2012-2016, 2021
- IEEE International Conference on Dependable, Autonomic, and Secure Computing (*DASC*), 2011, 2014.
- International Symposium on Engineering Secure Software and Systems (*ESSOS*), 2014-2015.
- IFIP International Conference on Formal Methods for Open Object-based Distributed Systems and International Conference on FORMal TEchniques for Networked and Distributed Systems (*FMOODS & FORTE*), 2010-2011
- IFIP International Conference on Formal Techniques for Distributed Objects, Components, and Systems (*FORTE*), 2014
- ACIS International Conference of Artificial Intelligence (*IAI*), 2021
- IEEE/ACIS International Conference on Computer and Information Science (*ICIS*), 2021-Summer, 2021-Fall
- International Conference on Network and System Security (*NSS*), 2011
- ACM SIGPLAN Conference on Programming Language Design and Implementation (*PLDI*), external review committee, 2016
- Conference on Principles of Security and Trust (*POST*), 2016, 2018
- Conference on Privacy, Security and Trust (*PST*), 2012
- Annual ACM Symposium on Applied Computing: Software Verification and Testing Track (*SAC-SVT*), 2009-2011
- International Conference on Security and Cryptography (*SECRYPT*), 2018-2021
- IEEE/ACIS International Conference on Software Engineering Research, Management and Applications (*SERA*), 2009-2011, 2014-2019, 2021
- International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (*SNPD*), 2012, 2021-Winter, 2021-Summer

*Conference organization:*

- Co-General Chair (with Simon Ou) for the 2020 ACM Conference on Computer and Communications Security (*CCS*)
- Local Chair for the 2016 ACM Symposium on Principles of Programming Languages (*POPL*)
- Co-organizer of the “Grand Challenges in Programming Languages” panel at the 2009 ACM Symposium on Principles of Programming Languages (*POPL*)

*Reviewer for many conferences and journals, including:*

IEEE Computer Security Foundations Symposium (*CSF*), Computers and Security (*C&S*), ACM Computing Surveys (*ACMCS*), ACM Conference on Computer and Communications Security (*CCS*), Electronic Commerce and Research Applications (*ECRA*), European Symposium on Programming (*ESOP*), European Symposium on Research in Computer Security (*ESORICS*), Foundations of Software Technology and Theoretical Computer Science (*FSTTCS*), IEEE International Conference on

Communications (*ICC*), IET Information Security (*IET-IFS*), International Journal of Information Security (*IJIS*), Information Processing Letters (*IPL*), Journal of Computer Security (*JCS*), Journal of Software Maintenance and Evolution (*JSME*), Journal of Systems and Software (*JSS*), Mathematical Structures in Computer Science (*MSCS*), ACM Workshop on Programming Languages and Analysis for Security (*PLAS*), ACM Symposium on Programming Languages Design and Methodology (*PLDI*), ACM Symposium on Principles of Programming Languages (*POPL*), International Conference on Runtime Verification (*RV*), Science of Computer Programming (*SCP*), Software Tools and Technology Transfer (*STTT*), Software Testing Verification and Reliability (*STVR*), IEEE Transactions on Computers (*TC*), The Computer Journal—Oxford University Press (*TCJ*), IEEE Transactions on Dependable and Secure Computing (*TDSC*), IEEE/ACM Transactions on Networking (*ToN*), ACM Transactions on Programming Languages and Systems (*TOPLAS*), ACM Transactions on Privacy and Security (*TOPS*), IEEE Transactions on Reliability (*TR*), ACM Transactions on Software Engineering and Methodology (*TOSEM*).

*NSF Service:*

- National Science Foundation panelist (2008, 2009, 2016, 2018, 2020)

*USF CSE Department Service:*

- Graduate-program Committee (2006-present)
- Undergraduate/ABET Committee (2019-present)
- Tenure and Promotion Committee (2012-present), Chair 2021-2022
- Chair, Corporate Fellowship Committee (2021-2022)
- BS CyS Curriculum Workgroup (2021-present)
- Mentoring Committee (2012-present)
- Data and Decisions Support (formerly Planning and External Relations) Committee (2013-2019)
- Faculty-evaluation Committee (2019)
- Faculty-search Committee (2011-2015, 2017-2018)

*USF College of Engineering Service:*

- Faculty Governance Committee (2021-present)
- Engineering Research Advisory Council (2012-2016)
- Cybersecurity Faculty-search Committee (2014-2015)

*USF Service:*

- Technical Advisor to CyberFlorida (2021)
- Distinguished University Professor Discipline Committee (2018)
- Florida Center for Cybersecurity (FC<sup>2</sup>) Curriculum Assessment Group (2016)

*Community Service:*

- Judge, Florida State Science and Engineering Fair (2009-2020)
- Judge, Hillsborough County Regional Science Fair (2007-2013)

**Funding**

- *Languages and Tools for Specifying and Analyzing Data Security Policies for the ACDC System.* Jay Ligatti (PI). Sponsor: MIT Lincoln Laboratory. Project dates: 6/1/2021-5/31/2022. Amount \$55,240.
- *Identify Sources and Risks on Cybersecurity for Connected Vehicle Infrastructures.* Pei-Sung Lin (PI), Jay Ligatti (Co-PI), Xiaopeng Li (Co-PI), Sean Barbeau (Co-PI), Achilleas Kourtellis (Co-PI). Sponsor: FDOT. Project dates: 5/18/20-11/17/21. Amount: \$152,989.
- *Secure Software Development for Network Defense Technologies.* Jay Ligatti (PI). Sponsor: OPSWAT. Project dates: 2/11/20-5/8/20. Amount: \$10,000 + \$10,000 matching from the Florida High Tech Corridor.
- *SaTC: CORE: Medium: Collaborative: Understanding Security in the Software Development Lifecycle: A Holistic, Mixed-Methods Approach.* Michelle Mazurek (PI at UMD), Michael Hicks (co-PI at UMD), Xinming Ou (PI at USF), Jay Ligatti (co-PI at USF), and Daniel Lende (co-PI at USF). NSF awards CNS-1801545 (UMD) and CNS-1801633 (USF). Project dates: 9/1/18-8/31/21. Amount: \$700,000 (UMD) + \$500,000 (USF).
- *Enhancing Cybersecurity in Public Transportation.* Sean Barbeau (PI) and Jay Ligatti (co-PI). Florida Department of Transportation, Agreement BDV25 TWO 977-51. Project dates: 1/1/2018-6/30/2019. Amount: \$292,995.
- *TWC: Small: Techniques and Tools for Enforcing Proximity-based Policies in Wireless Systems.* Yao Liu (PI) and Jay Ligatti (co-PI). NSF SaTC award CNS-1527144. Project dates: 9/1/15-8/31/18. Amount: \$300,000.
- *II-New: A research platform for heterogeneous, massively parallel computing.* Yicheng Tu (PI), Swaroop Ghosh (co-PI), Jay Ligatti (co-PI), Sagar Pandit (co-PI), Sudeep Sarkar (co-PI). NSF CRI award CNS-1513126. Project dates: 7/1/15-6/30/2019. Amount: \$679,798.
- *Collaborative Authentication for the Internet of Things.* Jay Ligatti (PI) and Daniela Oliveira (co-PI at University of Florida). Sponsor: Florida Center for Cybersecurity (FC<sup>2</sup>). Project dates: 7/1/17-6/30/19. Amount: \$25,000 (USF) + \$25,000 (University of Florida).
- *Analysis of Cryptographic Primitives and Protocols (for VTE, Virtual Tunneling Effect).* Jay Ligatti (PI), Yao Liu (co-PI), and Dmitry Goldgof (co-PI). Sponsor: CBT Holding, LLC. Project dates: 5/9/16-5/8/17. Amount: \$56,649 + \$56,649 matching from the Florida High Tech Corridor.
- *Practical Improvements to Network Security Infrastructure.* Jay Ligatti (PI). Sponsor: Impulse Point, LLC. Project dates: 9/1/15-5/5/17. Amount: \$70,146 + \$70,146 matching from Florida High Tech Corridor.
- *Cyber Resilience for Injection Attacks.* Jay Ligatti (PI) and Geoffrey Smith (co-PI at Florida International University). Sponsor: Florida Center for Cybersecurity (FC<sup>2</sup>). Project dates: 3/1/15-5/31/17. Amount: \$50,000 (USF) + \$50,000 (Florida International University).
- *Development of Network-security Tools.* Jay Ligatti (PI). Sponsor: Impulse Point, LLC. Project dates: 3/1/13-12/31/13. Amount: \$61,356 + \$61,356 matching from Florida High Tech Corridor.

- *Development of a Marketplace Portal Framework.* Jay Ligatti (PI). Sponsor: Enporion. Project dates: 1/1/11-12/31/11. Amount: \$68,855 + \$68,855 matching from Florida High Tech Corridor.
- *Avatar DNA using Biometrics and User Access Controls.* Sudeep Sarkar (PI) and Jay Ligatti (Co-PI). Sponsor: The Raytheon Company. Project dates: 1/2/09-8/24/10. Amount: \$60,000 + \$29,250 matching from Florida High Tech Corridor.
- *Security-research Partnership between USF and Team TACLAN: Wireless Security.* Jay Ligatti (PI), Rangachar Kasturi (co-PI). Sponsor: Team TACLAN. Project dates: 10/1/08-9/30/09. Amount: \$133,333.
- *Collaborative Research - ANET: Mobius: A Multi-Tier Socially-Aware Network Infrastructure.* Adriana Iamnitchi (PI), Jay Ligatti (co-PI), Cristian Borcea (PI at NJ Inst of Tech), and Quentin Jones (co-PI at NJ Inst of Tech). NSF NeTS awards CNS-0831785 (USF) and CNS-0831753 (NJIT). Project dates: 9/1/08-8/31/12. Amount: \$429,999 (USF) + \$409,978 (NJIT).
- *CAREER: Foundational Theories and Enforcement Tools for Secure Software Systems.* Jay Ligatti (PI). NSF award CNS-0742736. Project dates: 2/1/08-1/31/2014. Amount: \$412,771 + \$8,000 (supplemental REU funding).
- *CT-ISG: Collaborative Research: Trustworthy Enforcement of Domain-independent Run-time Policies.* Jay Ligatti (PI), Adriana Iamnitchi (co-PI), and Lujó Bauer (co-PI at Carnegie Mellon University). NSF CyberTrust awards CNS-0716343 (USF) and CNS-0716216 (CMU). Project dates: 8/1/07-7/31/11. Amount: \$300,000 (USF) + \$50,000 (CMU).
- *Security-research Partnership between USF and Team TACLAN.* Jay Ligatti (PI), Rangachar Kasturi (co-PI). Sponsor: Team TACLAN. Project dates: 8/24/07-8/23/08. Amount: \$114,189.