# Curriculum Vitae

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## 1 Education

**The Pennsylvania State University** University Park, PA
PhD, Computer Science and Engineering, December 2011
Advisor: Dr. Patrick D. McDaniel
Dissertation Title: *Building Scalable Document Integrity Systems*

**The Pennsylvania State University** University Park, PA
MS, Computer Science and Engineering, 2009
Advisor: Dr. Patrick D. McDaniel
Thesis Title: *Scalable Web Content Attestations*

**The Pennsylvania State University** University Park, PA
B.S., Computer Engineering, 2006

## 2 Professional Experience

- **Assistant Professor**, August 2017-present
  University of North Carolina at Charlotte
  Department of Software and Information Systems
  Charlotte, NC
  *Conducted research on a number of related areas: 1) novel solutions for building resilient systems that ensured continued operation in the face of compromise; 2) secure software-defined networking to support resilient systems; 3) trustworthy endpoint agent designs. Developed architectures that aimed to be efficient and secure against advanced adversaries. Techniques explored included data provenance and graph analysis. Target systems included cloud, enterprise, and embedded systems.*

  *Developed and taught two classes. The first was titled IT Infrastructure and Security where students learned about the configuration and management of enterprise services (e.g., DNS, LDAP, Kerberos, network storage, email servers, and web servers). I restructured the class to introduce containers and virtualization into the curriculum and integrated each of the assignments culminating in a functioning email server for a small enterprise network. The second class was titled Competitive Cyber Defense, an advanced undergraduate and graduate class, where students examined techniques for building secure architectures for enterprise services. In this class students would develop a plan to secure an existing enterprise network, including system and network security policies.*
  *Served as a mentor for several PhD, MS, and undergraduate student projects, helping students develop technical and professional skills. Helped with issues surrounding career path selection, technical skill development, and professional skill development. Additionally, I established a research lab within the university focused on research into resilient systems. In this lab, students worked collaboratively on research projects under my supervision.*
  *Acted as faculty mentor for the 49th Security Division, a student organization that focused on cybersecurity and ethical hacking. As part of this role, I helped students prepare for cybersecurity competitions such as the National Collegiate Cyber Defense Competition and the Department of Energy Cyberforce competition.*
- **Research Scientist**, September 2011 to August 2017
  **Secure Resilient Systems and Technology Group**, MIT Lincoln Laboratory, Lexington, MA

*Principal investigator and designer of the security architecture for a mobile satellite communications terminal. Created a novel security architecture that met the security and information assurance requirements of the funding agency. The architecture relied on Linux-based virtualization and trusted computing hardware (i.e. the Trusted Platform Module) to ensure the integrity and confidentiality of the data and code for the platform.*

*Worked on several programs related to cloud computing security and data provenance, including a program to integrate data provenance into applications that would ensure the integrity of the data being used to make decisions. The data provenance system included an analytic framework that would alert end-users to issues related to the data being accessed. Developed a lightweight data provenance collection system that could be integrated into existing security architectures where information assurance accreditation was required.*

*Served as a technical advisor to the Department of Defense within the office of the Assistant Secretary of Defense for Research and Engineering. Evaluated research programs and proposals and provided guidance on future directions for program investments.*

- **Research Assistant**, May 2008 to September 2011
  The Pennsylvania State University
  University Park, PA
  Advisor: Dr. Patrick D. McDaniel
  *Studied and developed systems to support integrity of web content protected by the Trusted Platform Module. Developed efficient solutions to certify the integrity of content, ensuring a minimal reduction in throughput while providing stronger security guarantees about the content being served. Explored solutions for secure storage architectures as part of a collaborative project. Developed solutions to demonstrate novel security solutions based on upcoming storage architectures.*
- **Research Assistant**, September 2007 to May 2008
  The Pennsylvania State University University Park, PA
  Advisor: Dr. Patrick D. McDaniel
  Mentor: Dr. Subhabrata Sen
  *Worked on problems in configuration management. Assisted in developing/testing tool for creating router configurations.*
- **Summer Research Intern AT&T**, May 2007 to September 2007
  Internet and Networking Systems Research Center, AT&T Labs Research,
  Florham Park, NJ
  Mentor: Dr. Subhabrata Sen
  *Worked on problems in configuration management. Assisted in developing internal tool for creating configurations.*
- **Instructor**, January 2007 to May 2007
  The Pennsylvania State University
  University Park, PA
  Department of Computer Science Engineering, Pennsylvania State University
  *Taught Introduction to Algorithmic Processes (CMPSC 101). Instructed students in program design and creation using the MS Visual Basic programming language.*

# 3 Selected Skills and Technology Experience

*Ordered by experience*

- **Programming languages:** Python, C, Bash, Java, C++, Ruby
- **Linux system administration:** automation, management, deployment, kernel programming

- **Security:** public-key cryptography, mandatory access control policies (SELinux and AppArmor), firewall administration and policy development
- **Cloud technology:** Virtualization, Containers (LXC, LXD, Docker), Proxmox Virtual Environment, VMware ESXi and vSphere

# 4 Publications

## 4.1 Peer Reviewed Journal Publications

1. Adam Bates, Dave (Jing) Tian, Grant Hernandez, Thomas Moyer, Kevin R. B. Butler, and Trent Jaeger. "Taming the Costs of Trustworthy Provenance Through Policy Reduction". In: *ACM Transactions on Internet Technology* 17.4 (Sept. 2017), 34:1–34:21. ISSN: 1533-5399. DOI: 10.1145/3062180. URL: https://thomasmoyer.org/pubs/bth+2017.pdfw
2. Thomas Moyer, Kevin R.B. Butler, Joshua Schiffman, Patrick McDaniel, and Trent Jaeger. "Scalable Web Content Attestation". In: *IEEE Transactions on Computers* 61.5 (May 2012), pp. 686–699. ISSN: 0018-9340. DOI: 10.1109/TC.2011.60. URL: https://thomasmoyer.org/pubs/mbs+2012.pdf
3. Joshua Schiffman, Thomas Moyer, Trent Jaeger, and Patrick McDaniel. "Network-Based Root of Trust for Installation". In: *IEEE Security Privacy* 9.1 (Jan. 2011), pp. 40–48. ISSN: 1540-7993. DOI: 10.1109/MSP.2011.15. URL: https://thomasmoyer.org/pubs/smj+2011.pdf
4. Kevin R.B. Butler, Stephen McLaughlin, Thomas Moyer, and Patrick McDaniel. "New Security Architectures Based on Emerging Disk Functionality". In: *IEEE Security Privacy* 8.5 (Sept. 2010), pp. 34–41. ISSN: 1540-7993. DOI: 10.1109/MSP.2010.90. URL: https://thomasmoyer.org/pubs/bmm+2010.pdf
5. William Enck, Thomas Moyer, Patrick McDaniel, Subhabrata Sen, Panagiotis Sebos, Sylke Spoerel, Albert Greenberg, Yu-Wei Eric Sung, Sanjay Rao, and William Aiello. "Configuration Management at Massive Scale: System Design and Experience". In: *IEEE Journal on Selected Areas in Communications* 27.3 (Apr. 2009), pp. 323–335. ISSN: 0733-8716. DOI: 10.1109/JSAC.2009.090408. URL: https://thomasmoyer.org/pubs/emm+2009.pdf

## 4.2 Peer Reviewed Conference Publications

6. Abdullah Al Farooq, Jessica Marquard, Kripa George, and Thomas Moyer. "Detecting Safety and Security Faults in PLC Systems with Data Provenance". In: *IEEE International Symposium on Technologies for Homeland Security*. Nov. 2019. arXiv: 1911.06304 [cs.CR]
7. Abdullah Al Farooq, Ehab Al-Shaer, Thomas Moyer, and Krishna Kant. "IoTC$^2$: A Formal Method Approach for Detecting Conflicts in Large Scale IoT Systems". In: *2019 IFIP/IEEE Symposium on Integrated Network and Service Management (IM)*. Apr. 2019, pp. 442–447. URL: https://thomasmoyer.org/pubs/aamk2019.pdf
8. Thomas Pasquier, Xueyuan Han, Thomas Moyer, Adam Bates, Olivier Hermant, David Eyers, Jean Bacon, and Margo Seltzer. "Runtime Analysis of Whole-System Provenance". In: *Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security*. CCS '18. acceptance rate=16.6%. Toronto, Canada: ACM, 2018, pp. 1601–1616. ISBN: 978-1-4503-5693-0. DOI: 10.1145/3243734.3243776. URL: https://thomasmoyer.org/pubs/phm+2018.pdf
9. Wajih Ul Hassan, Mark Lemay, Nuraini Aguse, Adam Bates, and Thomas Moyer. "Towards Scalable Cluster Auditing through Grammatical Inference over Provenance Graphs". In: *25th Annual Network and Distributed System Security Symposium, NDSS 2018, San Diego, California, USA, February*

*18-21, 2018*. acceptance rate=21.0%. The Internet Society, 2018. URL: https://thomasmoyer.org/pubs/hbm2018.pdf

10. Thomas Pasquier, Xueyuan Han, Mark Goldstein, Thomas Moyer, David Eyers, Margo Seltzer, and Jean Bacon. "Practical Whole-system Provenance Capture". In: *Proceedings of the 2017 Symposium on Cloud Computing*. SoCC '17. Santa Clara, California: ACM, 2017, pp. 405–418. ISBN: 978-1-4503-5028-0. DOI: 10.1145/3127479.3129249. URL: https://thomasmoyer.org/pubs/phg+2017.pdf

11. Adam Bates, Kevin Butler, Alin Dobra, Brad Reaves, Patrick Cable, Thomas Moyer, and Nabil Schear. "Transparent Web Service Auditing via Network Provenance Functions". In: *Proceedings of the 26th International Conference on World Wide Web*. WWW '17. acceptance rate=17.0%. Perth, Australia: International World Wide Web Conferences Steering Committee, Apr. 2017, pp. 887–895. ISBN: 978-1-4503-4913-0. DOI: 10.1145/3038912.3052640. URL: https://thomasmoyer.org/pubs/bbd+2017.pdf

12. Nabil Schear, Patrick T. Cable II, Thomas Moyer, Bryan Richard, and Robert Rudd. "Bootstrapping and Maintaining Trust in the Cloud". In: *Proceedings of the 32Nd Annual Conference on Computer Security Applications*. ACSAC '16. acceptance rate=20.7%. Los Angeles, California, USA: ACM, Dec. 2016, pp. 65–77. ISBN: 978-1-4503-4771-6. DOI: 10.1145/2991079.2991104. URL: https://thomasmoyer.org/pubs/scm+2016.pdf

13. Thomas Moyer, Patrick T. Cable, Karishma Chadha, Robert Cunningham, Nabil Schear, Warren Smith, Adam Bates, Kevin Butler, Frank Capobianco, and Trent Jaeger. "Leveraging Data Provenance to Enhance Cyber Resilience". In: *1st IEEE Cybersecurity Development (SecDev)*. Nov. 2016

14. Thomas Moyer and Vijay Gadepally. "High-throughput Ingest of Data Provenance Records into Accumulo". In: *2016 IEEE High Performance Extreme Computing Conference, HPEC 2016, Waltham, MA, USA, September 13-15, 2016*. IEEE, Sept. 2016, pp. 1–6. ISBN: 978-1-5090-3525-0. DOI: 10.1109/HPEC.2016.7761589. URL: https://thomasmoyer.org/pubs/mg2016.pdf

15. Adam Bates, Dave Tian, Kevin R.B. Butler, and Thomas Moyer. "Trustworthy Whole-System Provenance for the Linux Kernel". In: *24th USENIX Security Symposium (USENIX Security 15)*. acceptance rate=15.7%. Washington, D.C.: USENIX Association, Aug. 2015. URL: https://thomasmoyer.org/pubs/btb+2015.pdf

16. Thomas Moyer, Trent Jaeger, and Patrick McDaniel. "Scalable Integrity-Guaranteed AJAX". in: *Web Technologies and Applications*. Ed. by Quan Z. Sheng, Guoren Wang, Christian S. Jensen, and Guandong Xu. Berlin, Heidelberg: Springer Berlin Heidelberg, Apr. 2012, pp. 1–19. ISBN: 978-3-642-29253-8. URL: https://thomasmoyer.org/pubs/mjm2012.pdf

17. Boniface Hicks, Sandra Rueda, Dave King, Thomas Moyer, Joshua Schiffman, Yogesh Sreenivasan, Patrick McDaniel, and Trent Jaeger. "An Architecture for Enforcing End-to-End Access Control Over Web Applications". In: *Proceedings of the 2010 Symposium on Access Control Models and Technologies, SACMAT '10*. June 2010. URL: https://thomasmoyer.org/pubs/hrk+2010.pdf

18. Thomas Moyer, Kevin Butler, Joshua Schiffman, Patrick McDaniel, and Trent Jaeger. "Scalable Web Content Attestation". In: *2009 Annual Computer Security Applications Conference*. acceptance rate=19.0%. Dec. 2009, pp. 95–104. DOI: 10.1109/ACSAC.2009.19. URL: https://thomasmoyer.org/pubs/mbs+2009.pdf

19. Joshua Schiffman, Thomas Moyer, Christopher Shal, Trent Jaeger, and Patrick McDaniel. "Justifying Integrity Using a Virtual Machine Verifier". In: *2009 Annual Computer Security Applications Conference*. acceptance rate=19.0%. Dec. 2009, pp. 83–92. DOI: 10.1109/ACSAC.2009.18. URL: https://thomasmoyer.org/pubs/sms+2009.pdf

## 4.3 Peer Reviewed Extended Abstracts/Short Papers

20. Warren Smith, Thomas Moyer, and Charles Munson. "Curator: Provenance Management for Modern Distributed Systems". In: *10th USENIX Workshop on the Theory and Practice of Provenance, TaPP 2018, London, UK, July 11-12, 2018.* Ed. by Melanie Herschel. USENIX Association, July 2018. URL: `https://thomasmoyer.org/pubs/smm2018.pdf`

21. Mark Lemay, Wajih Ul Hassan, Thomas Moyer, Nabil Schear, and Warren Smith. "Automated Provenance Analytics: A Regular Grammar Based Approach with Applications in Security". In: *9th USENIX Workshop on the Theory and Practice of Provenance (TaPP 2017).* Seattle, WA: USENIX Association, 2017. URL: `https://thomasmoyer.org/pubs/lhm+2017.pdf`

22. Adam Bates, Kevin R.B. Butler, and Thomas Moyer. "Take Only What You Need: Leveraging Mandatory Access Control Policy to Reduce Provenance Storage Costs". In: *7th USENIX Workshop on the Theory and Practice of Provenance (TaPP 15).* Edinburgh, Scotland: USENIX Association, July 2015. URL: `https://thomasmoyer.org/pubs/bbm2015.pdf`

23. Joshua Schiffman, Thomas Moyer, Hayawardh Vijayakumar, Trent Jaeger, and Patrick McDaniel. "Seeding Clouds with Trust Anchors". In: *CCSW '10: Proceedings of the 2010 ACM workshop on Cloud computing security.* ACM, Oct. 2010. URL: `https://thomasmoyer.org/pubs/smv+2010.pdf`

## 4.4 Other Publications

24. Adam Bates, Kevin Butler, Alin Dobra, Brad Reaves, Patrick Cable, Thomas Moyer, and Nabil Schear. "Retrofitting Applications with Provenance-Based Security Monitoring". `https://arxiv.org/abs/1609.00266`. Sept. 2016

25. Thomas Moyer and Patrick McDaniel. *Scalable Integrity-Guaranteed AJAX.* tech. rep. NAS-TR-0149-2011. Department of Computer Science and Engineering, Pennsylvania State University, University Park, PA, USA: Network and Security Research Center, Mar. 2011

26. Thomas Moyer. *USENIX Security Symposium Session Summaries.* ;login: The USENIX Magazine. Aug. 2010

27. Thomas Moyer. *USENIX Conference on Web Application Developement Session Summaries.* ;login: The USENIX Magazine. Oct. 2010

28. Joshua Schiffman, Thomas Moyer, Hayawardh Vijayakumar, Trent Jaeger, and Patrick McDaniel. *Seeding Clouds with Trust Anchors.* Tech. rep. NAS-TR-0127-2010. Department of Computer Science and Engineering, Pennsylvania State University, University Park, PA, USA: Network and Security Research Center, Apr. 2010

29. Kevin Butler, Stephen McLaughlin, Thomas Moyer, Joshua Schiffman, Patrick McDaniel, and Trent Jaeger. *Firma: Disk-Based Foundations for Trusted Operating Systems.* Tech. rep. NAS-TR-0114-2009. Department of Computer Science and Engineering, Pennsylvania State University, University Park, PA, USA: Network and Security Research Center, Apr. 2009

30. Joshua Schiffman, Thomas Moyer, Christopher Shal, Trent Jaeger, and Patrick McDaniel. *No Node Is an Island: Shamon Integrity Monitoring Approach.* Tech. rep. NAS-TR-0103-2009. Department of Computer Science and Engineering, Pennsylvania State University, University Park, PA, USA: Network and Security Research Center, Feb. 2009

31. Kevin Butler, Stephen McLaughlin, Thomas Moyer, Trent Jaeger, and Patrick McDaniel. *SwitchBlade: Policy-Driven Disk Segmentation.* Tech. rep. NAS-TR-0098-2008. Department of Computer Science and Engineering, Pennsylvania State University, University Park, PA, USA: Network and Security Research Center, Nov. 2008

32. Thomas Moyer, Kevin Butler, Joshua Schiffman, Patrick McDaniel, and Trent Jaeger. *Scalable Asynchronous Web Content Attestation*. Tech. rep. NAS-TR-0095-2008. Department of Computer Science and Engineering, Pennslyvania State University, University Park, PA, USA: Network and Security Research Center, Sept. 2008

# 5 Student Supervision

## 5.1 Doctoral Students Supervised

- **Ambarish Regmi**, Dissertation advisor, Project title: *Trustworhty Endpoint Agents for Enterprise Systems*, Degree: PhD, Completion date: *expected Spring 2022*
- **Trevon Williams**, Dissertation advisor, Project title: *Software-defined Networking for Resilience*, Degree: PhD, Completion date: *expected Spring 2024*
- **Enas Al Kawasmi**, Dissertation advisor, Project title: *A Secure Decentralized Storage Platform for Data Provenance*, Degree: PhD, Completion date: *expected Spring 2023*
- **Abdullah Al Farooq**, Dissertation advisor, Project title: *Enforcing Security Policies with Data Provenance to Enrich the Security of IoT/Smart Building System*, Degree: PhD, Completion date: Summer 2020, Current Position: Assistant Professor, Wentworth Institute of Technology, Boston, MA

## 5.2 Masters Students Supervised

- **Trevon Williams**, Thesis advisor, Project title: *A Programmable Approach for a Resilient SDN Architecture*, Degree: MS Cybersecurity, Completion date: Fall 2019
- **Mir Mehedi Pritom**, Academic advisor, Degree: MS IT, Completion date: Fall 2018
- **Anibal J. Robles Perez**, Thesis advisor, Project title: *Towards and Agent-based Approach to Simulating Humans Falling for Phishing Attacks*, Degree: MS IT, Completion date: Fall 2018

## 5.3 Bachelors Students Supervised

- **Cameron Pacileo**, Project supervisor, Project title: *Rollback-aware Trustworthy Data Provenance*, Degree: BS, Completion date: *expected Spring 2022*
- **Bryce Kane**, Project supervisor, Project title: *Building a Safe and Scalable Testbed for System Security Research*, Degree: BS, Completion date: *expected Spring 2022*
- **Zachary Taylor**, Project supervisor, Project title: *Enhancing Trustworthy Whole-system Provenance Analysis with Network Events*, Degree: BS, Completion date: *expected Fall 2019*
- **Kevin Cardoso**, Project supervisor, Project title: *Building a Safe and Scalable Testbed for System Security Research*, Degree: BS, Completion date: Spring 2019
- **Joe Waller**, Project supervisor, Project title: *Enhancing Trustworthy Data Provenance Systems with Network Event Tracking*, Degree: BS, Completion date: Spring 2019, Note: PhD student starting in Fall 2019
- **Joeseph Logan**, Project supervisor, Project title: *Rollback-aware Trustworthy Data Provenance*, Degree: BS, Completion date: Spring 2019
- **Abdalla El-Ghannam**, Project supervisor, Project title: *Exploring Resource-aware Data Provenance Collection in Embedded Devices*, Degree: BS, Completion date: Spring 2019

- **Jessica Marquard**, Project supervisor, Project title: *Building Resilient Microservices with Data Provenance*, Degree: BS, Completion date: Summer 2018
- **Kailey Wolfe**, REU faculty mentor, Project title: *Exploration of Graph Databases for Secure Data Provenance*, Degree: BS, Note: Summer 2018 REU Student
- **Karena Huang**, REU faculty mentor, Project title: *Exploration of Graph Databases for Secure Data Provenance*, Degree: BS, Note: Summer 2018 REU Student
- **Kripa George**, REU faculty mentor, Project title: *Identifying Conflicts in Provenance Graphs for IoT/Smart Buildings*, Degree: BS, Note: Summer 2019 REU Student

# 6 Teaching

## 6.1 Courses Taught

### 6.1.1 Graduate Courses

- ITIS 6010: *Topics in SIS: Competitive Cyber Defense*: Spring 2019, Average enrollment: 18 students, Note: Starting Spring 2020 this will be ITIS 5246

### 6.1.2 Undergraduate Courses

- ITIS 3110: *IT Infrastructure II: Design and Practice*: Fall 2017, Spring 2018, Average enrollment: 50 students
- ITIS 3246: *IT Infrastructure and Security*: Fall 2018, Spring 2019, Fall 2019, Average enrollment: 53 students
- ITIS 4010: *Topics in SIS: Competitive Cyber Defense*: Spring 2018, Spring 2019, Average enrollment: 16 students, Note: Starting Spring 2020 this will be ITIS 4246

# 7 Service and Outreach

## 7.1 External Service

### 7.1.1 Invited Talks

1. "Blockchain Introduction". Concord, NC, May 2019
2. "Scalable Cluster Auditing for Resilient Systems". University Park, PA, Sept. 2018
3. "Building Resilient Systems with Secure End-to-End Data Provenance". Ithica, NY, Jan. 2017
4. "Building Resilient Systems with Secure End-to-End Data Provenance". Worcester, MA, Jan. 2017
5. "Building Resilient Systems with Secure End-to-End Data Provenance". Storrs, CT, Oct. 2016
6. "Building Resilient Systems with Secure End-to-End Data Provenance". Lexington, MA, June 2016
7. "Scalable Web Content Attestation". Lexington, MA, Jan. 2011
8. "Building Document Integrity Systems". University Park, PA, Aug. 2011
9. "Scalable Web Content Attestation". University Park, PA, May 2009

### 7.1.2 Journal Reviewer

*Years removed for brevity*

- ACM Cloud Computing Security Workshop (CCSW)
- ACM Computer and Communications Security Conference (CCS)
- ACM Symposium on Access Control Models and Technologies (SACMAT)
- ACM Transactions on Internet Technology (TOIT)
- ACM Transactions on Privacy and Security (TOPS)
- Annual Computer Security Applications Conference (ACSAC)
- Future Generation Computer Systems (FGCS)
- IEEE Embedded Systems Letters (ESL)
- IEEE International Conference on Computer Communications (INFOCOM)
- IEEE International Symposium on Hardware Oriented Security and Trust (HOST)
- IEEE Security and Privacy Magazine (S&P)
- IEEE Symposium on Security and Privacy (Oakland)
- IEEE Transactions on Big Data (TBD)
- IEEE Transactions on Dependable and Secure Computing (TDSC)
- IEEE Transactions on Software Engineering (TSE)
- International Conference on Information Security and Assurance (ISA)
- International Conference on Information Systems Security (ICISS)
- Packt Publishing
- Springer-Verlag Transactions on Computational Science (TCS)
- USENIX Security Symposium (USENIX Security)
- USENIX Workshop on Hot Topics in Security (HotSec)
- Wiley Software Practice and Experience (SPE)
- Workshop on Virtual Machine Security (VMSec)

### 7.1.3 Organizing Committees

- *2021*: IEEE Secure Development Conference (SecDev, Treasurer), IEEE Symposium on Security and Privacy (Oakland, Publications Chair), Provenance Week (General Chair)
- *2020*: IEEE Secure Development Conference (SecDev, Treasurer), IEEE Symposium on Security and Privacy (Oakland, Student PC Chair), Provenance Week (General Chair), Annual Computer Security Applications Conference (ACSAC, Student Conferenceships Chair)
- *2019*: IEEE Symposium on Security and Privacy (Oakland, Student PC Chair), USENIX Workshop on the Theory and Practice of Provenance (TaPP, Co-Chair), Annual Computer Security Applications Conference (ACSAC, Student Conferenceships Chair)
- *2018*: IEEE Symposium on Security and Privacy (Oakland, Treasurer), Annual Computer Security Applications Conference (ACSAC, Poster and WiP Chair)
- *2017*: IEEE Symposium on Security and Privacy (Oakland, Treasurer), Annual Computer Security Applications Conference (ACSAC,Poster and WiP Chair)
- *2016*: Annual Computer Security Applications Conference (ACSAC,Poster and WiP Chair)
- *2015*: Annual Computer Security Applications Conference (ACSAC, Poster and WiP Chair)

### 7.1.4 Program Committees

- *2021*: IEEE International Conference on Cyber-Security and Resilience (IEEE CSR), International Conference on Science of Cyber Security (SciSec), IEEE International Conference on Distributed Computing Systems (ICDCS)
- *2020*: International Conference on Science of Cyber Security (SciSec), EAI International Conference on Security and Privacy in Communication Networks (SecureComm)
- *2019*: International Conference on Science of Cyber Security (SciSec), Premier International Conference for Military Communications (MILCOM), IEEE Secure Development Conference (SecDev),
- *2018*: Network and Distributed System Security Symposium (NDSS), USENIX Security (Security), International Workshop on Theory and Practice of Provenance (TaPP), International Conference on Science of Cyber Security (SciSec), IEEE Secure Development Conference (SecDev), Premier International Conference for Military Communications (MILCOM)
- *2017*: International Conference on Availability, Reliability and Security (ARES), International Workshop on Theory and Practice of Provenance (TaPP), International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Premier International Conference for Military Communications (MILCOM), IEEE Secure Development Conference (SecDev)
- *2016*: Annual Computer Security Applications Conference (ACSAC), International Conference on Availability, Reliability and Security (ARES), Premier International Conference for Military Communications (MILCOM)
- *2015*: Annual Computer Security Applications Conference (ACSAC), International Conference on Availability, Reliability and Security (ARES), Premier International Conference for Military Communications (MILCOM)
- *2014*: Annual Computer Security Applications Conference (ACSAC), International Conference on Availability, Reliability and Security (ARES)
- *2013*: Annual Computer Security Applications Conference (ACSAC), International Conference on Availability, Reliability and Security (ARES)
- *2012*: Annual Computer Security Applications Conference (ACSAC), International Conference on Availability, Reliability and Security (ARES)

### 7.1.5 Professional Affiliations/Memberships

- Member, Association for Computing Machinery (ACM)
- Member, ACM Special Interest Group on Security, Audit and Control (SIGSAC)
- Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, IEEE Computer Society
- Member, USENIX Association