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Security Clearance: Secret

Education

Ph.D. in Modeling and Simulation	Old Dominion University	2007
M.S. in Computer Science	University of Toledo	2002
B.E. in Computer Engineering	Mumbai University	1998

Experience

Associate Director Virginia Modeling, Analysis and Simulation Center	2019 - present
Associate Professor Computational, Modeling and Simulation Engineering Department Old Dominion University	2016 – present
Associate Professor Virginia Modeling, Analysis and Simulation Center	2016-2019
Associate Professor Electrical and Computer Engineering Department, Tennessee State University	2015 - 2016
Assistant Professor Electrical and Computer Engineering Department, Tennessee State University	2009 - 2015
Assistant Professor Electrical and Computer Engineering Department, Rowan University	2008 - 2009

Adjunct Professor
Electrical and Computer Engineering Department, Old Dominion
University

2007 - 2008

EXECUTIVE SUMMARY

Research

1. Awarded over \$13 M in contracts and grants from Air Force Research Lab (AFRL), Air Force Office of Scientific Research (AFOSR), Boeing, Department of Homeland Security (DHS), Department of Energy (DOE), National Science Foundation (NSF), Naval Surface Warfare Center (NSWC), and Office of Naval Research (ONR).
2. Two research papers were chosen as the Top 50 academic papers in Blockchain in 2018.
3. I have collaborated with industry members, such as, Sentara Healthcare, Accenture, and Reliability First to transition the research deliverables into commercial products. Cyber Risk Scoring and Mitigation (CRISM, www.crisism.org) and Bloxure (www.bloxure.com)
4. Winner of the Electric Power Research Institute Cyber security challenge competition
5. Selected as Fulbright Specialist to conduct critical infrastructure security research at University of Iceland
6. Inducted into the Tennessee State University million dollar club
7. Subgroup chair on Internet of Medical Things in the IEEE P2418.6 Standards Development Working Group (Blockchain in Healthcare and Life Sciences)
8. Served as Area chair for Security, Privacy, Trust and Incentives at ICCCN 2020, cyber risk track at WinterSim 2020, cybersecurity engineering track at SpringSim2019 and SpringSim 2020, Security Trust and Privacy in Emerging Cyber-Physical Systems Workshop held in conjunction with SECON 2019, 1st Light Chain workshop held in conjunction with IEEE Blockchain, Atlanta, 2019, 1st International Workshop on BLockchain Enabled Sustainable Smart Cities (BLESS 2018), Kansas City, MO, USA, Sept. 19, 2018 In Conjunction with the 4th IEEE Annual International Smart Cities Conference (ISC2 2018)
9. Partnering member in Department of Defense (DoD) Center of Excellence in Cyber security, DHS Center of Excellence in Critical Infrastructure Resilience and Department of Energy (DOE) Cyber Resilient Energy Delivery Consortium.
10. Awarded 3 DHS Scientific Leadership Award (SLA) grants (2010, 2011 and 2014) in the area of cloud security, IP geolocation, smartphone security, cyber security risk assessment, and moving target defense.
11. Founding Director of the Cyber Security Laboratory at the TSU Interdisciplinary Graduate Engineering (TIGER) Institute.
12. Published over 130 articles in journals, conferences, book chapters and books.
13. Awarded summer faculty research appointment in the area of cyber security at Argonne National Lab (2009), Air Force Research Lab, Rome, NY (2010-2013) and Naval Surface Warfare Center, Crane, Indiana (2015).

Education

1. Taught undergraduate and graduate courses at Old Dominion University and Tennessee State University (TSU) in cyber security, machine learning, computer networking and communications
2. Won TSU College of Engineering Teaching Excellence award
3. Awarded multiple education grants from NSF and ONR to enhance quality of TSU's undergraduate and graduate curriculum
4. NSF funded education software in virtual reality currently used by high school students in Tennessee.
5. Integrated biometrics, cloud security, embedded systems, and mobile security concepts, techniques and laboratory experiences within undergraduate and graduate curriculum
6. Advised 50+ u/g students for capstone/senior-design projects and internship/research experiences.
7. Organized and participated in workshops to train high school teachers and students in cyber security and virtual reality
8. Member of the Stratford High School, Computer Simulation and Game Programming Task Force to help in development of gaming laboratory.
9. Taught one week summer school at for Ph.D. students in computer and information security and in related fields at the UiA study centre in Metochi on Lesbos island, Greece.
10. At Old Dominion University, I have graduated two (2) M.S. Thesis students. In addition, I am advising six (6) PhD students. I also advised two (2) undergraduate researchers who have published conference papers. All my graduate students have published high-quality papers at top tier IEEE and ACM conferences.
11. At Tennessee State University, I graduated seven (7) Ph.D. students and nine (9) M.S. Thesis students

HONORS AND AWARDS

1. Fulbright Specialist
2. CCI Faculty Fellow
3. Electric Power Research Institute Research Challenge Award
4. Top 50 Blockchain Academic Research Paper Award
5. 2016 TSU Million Dollar Club
6. 2015 NSWC Summer Faculty Research
7. Three time winner of the TSU Faculty Research Mentorship Award (2013, 2014, 2015)
8. 2012 TBR Research Academy Fellow
9. 2011 Ida McClain Award (College of Engineering, TSU)
10. 2010 NSF/DoE FaST (Faculty Student Team) Fellowship
11. 2011 - 2013 AFRL, Rome Visiting Faculty Fellowship

GRANTS and CONTRACTS

Summary

Total Funding ~13 million

Primary Funding Agencies – AFOSR, AFRL, DHS, DOE, NSF, ONR, NSWC, Boeing, Amazon, Sentara Healthcare, Commonwealth of Virginia, Electric Power Research Institute, and TBR

Staff Supported – 5 Research Scientists and 3 Visiting Scholars

Graduate Students Supported – 35

Undergraduate Students Supported – 85

Awards

1. **PI**, "AI Model Certification in Operational Environments", MITRE, \$66,000, May 1, 2020 – Sep 30, 2020
2. **PI**, "Blockchain-Empowered Cyber-Resilient IoT Security Solution", CIT, \$150,000, July 1, 2020 – June 30, 2022
3. **PI**, "Blockchain Empowered Provenance Framework for Sensor Identity Management and Data Flow Security in Fossil-Based Power Plants", Department of Energy, \$400,000, September 1, 2019 – Aug 31, 2022
4. **PI**, "Attack Graph Modeling and Risk Remediation Plan", Electric Power Research Institute, \$75,000, August 1, 2019 – July 30, 2020
5. **PI**, "Cyber Risk and Resilience Analytics", Frontier Technology Inc, \$278,000, March 1, 2019 – Aug 30, 2020
6. **PI**, "Cyber Risk Scoring and Mitigation ", Commonwealth Research Commercialization Fund, \$100,000, 7/1/2018 - 6/30/2019.
7. **PI**, "Networked Device Identity Management using Blockchain ", \$767,000, Sentara Healthcare, 1/1/2018 - 12/31/2020.
8. **PI**, "Data provenance Assurance in Cloud using Blockchain," AFRL, \$1,050,000, 08/18/2016 - 12/31/2019
9. **Co-PI**, "Center of Excellence in Cyber Security", DoD, April 2015 – March 2020, \$4, 984,352 (my share - \$712K), Investigators: George Hsieh (NSU) [PI], Sachin Shetty and Jose Padilla (Old Dominion University)
10. **PI**, "Towards Community Resilience through Comprehensive Risk Assessment for Business Continuity ", DHS Critical Infrastructure Resilience Institute, \$372,977, 7/24/2016 - 6/30/2020.
11. **Site Lead**, "Cyber Resilient Energy Delivery Consortium", DOE, Oct 2015 – Sep 2020, \$28.1 M (My share – \$1 million), Department of Energy, Investigators: David Nicol (UIUC) [PI], Sachin Shetty (Old Dominion University), Massachusetts Institute of Technology, Rutgers Arizona State University, Argonne National Laboratory, Dartmouth College, Oregon State University, the Pacific Northwest National Laboratory, Tennessee State University, University of Houston and Washington State University
12. **PI**, "CC*DNI Campus Design: Internet2 Infrastructure to Enable Research in Big Data Science and Engineering at Tennessee State University," NSF, \$349,144, 01/01/2016 - 12/31/2017

13. **PI**, "Distributed machine learning for anomaly detection in massive datasets", Boeing Contract, \$450,000, 1/1/2016 - 12/31/2018.
14. **PI**, "Defenses and countermeasures of jamming attacks in wireless mesh networks", NEEC Contract, \$449,934, 3/14/2016 - 3/13/2019.
15. **PI**, "Embedded Systems Security Education", ONR (August 2015 – July 2018, \$599,800)
16. **Co-PI**, "Center of Excellence in Critical Infrastructure Resiliency", DHS (July 2015 – June 2020, Multi-university Center of Excellence funded by Department of Homeland Security and headed by University of Illinois.)
17. **Co-PI**, "Blue-Shirt Program: Engineering Clinic-Based Curriculum", NSF (July 2015 – June 2019, \$1,724,880).
18. **Co-PI**, "Data Analytics for Securing Critical Infrastructure", DHS (October 2014 - September 2020, \$1,000,000)
19. **PI**, "Collaborative Research: II-NEW: ROAR- A Research Infrastructure for Real-time Opportunistic Spectrum Access in Cloud based Cognitive Radio Networks", NSF CNS (August 2014- July 2017, \$88,119)
20. **PI**, "Adaptive Access control for Smartphone Cloud," AFRL/Clarkson, (Oct 2012 – Sep 2018, \$700,000)
21. **PI**, "Collaborative Project: Building An Innovative Smartphone Virtual Laboratory Environment for Cyber-security Education and Training," NSF, (August 2013 – July 2016, \$93,093)
22. **PI**, "Development of an agile and resilient security architecture to protect embedded systems from emerging cyber threats," Boeing, (Oct 2012 – Oct 2015, \$422,290).
23. **Co-PI**, "Heterogeneous VM Replication: A New Approach to Intrusion Detection, Active Response, and Recovery in Cloud Data Centers," AFOSR, (Feb 2012 – Jan 2015, \$616,278).
24. **PI**, "Amazon Web Services Grant," Amazon, (Feb 2012 – Jan 2013, \$1200).
25. **PI**, "Scholarships for Preparing the Global Engineer for Tomorrow's Workforce," NSF, (July 2013 – June 2014, \$600,000)
26. **PI**, "Collaborative Cyber Attack Data Capturing, Sharing and Analysis for Cloud Security," AFOSR, (Oct 2011 – Sep 2012, \$19,717 (subcontracted from UTSA)).
27. **PI**, "Secure Measurement-Based IP Geolocation for Cloud Auditing," NSF, (Aug 2011 – July 2015, \$238,835).
28. **PI**, "2011 DHS Scientific Leadership Award," DHS, (Aug 2011 – Jul 2016, \$500,000).
29. **PI**, "Collaborative Research: TUES: Vertical Integration of Concepts and Laboratory Experiences in Biometrics Across the Four Year Electrical and Computer Engineering Curriculum," NSF, (Oct 2011 – Sep 2015, \$131,080).
30. **Co-PI**, "Cyber Security Education and Research Training for ECE and CS programs," NSF, (Aug 2011 – July 2014, \$299,805).
31. **PI**, "2010 DHS Scientific Leadership Award," DHS, (Feb 2011 – Jan 2016, \$301,659).
32. **Co-PI**, "Development of a Virtual and Augmented Reality Laboratory for Research and Education at Tennessee State University," NSF, (Aug 2010 – July 2013, \$299,577).
33. **Co-PI**, "CI-TEAM Demonstration: Interactive and Collaborative Learning Environment using Virtual Reality Games Promoting Metacognition for Science and Engineering Design in Context," NSF, (Sep 2010 – Aug 2013, \$250,000).
34. **Co-PI**, "Tennessee Rising Stars," TBR, (Jul 2010 – Jun 2013, \$125,000).

35. **Co-PI**, "Empowering Students with Engineering Literacy and Systematic Problem Solving through Interactive and Cost-Effective Games," NSF, (Sep 2009 – Aug 2009, \$200,000).
36. **Co-PI**, "Intuitive Flowmeter Sizing Software," Siemens, (August 2008 – Jul 2009, \$30,000)

Publications

Edited Books

1. Charles Kamhoua, Alexander Kott, Laurent Njilla, **Sachin Shetty**, "Modeling and Design of Secure Internet of Things", John Wiley & Sons, 1 edition, 2020, ISBN 978-1-119-59336-2
2. **Sachin Shetty**, Charles Kamhoua, Laurent Njilla, "Blockchain for Distributed Systems Security", Wiley-IEEE Computer Society, 1 edition, 2019, ISBN 978-1-119-51960-7
3. **Sachin Shetty**, Xuebiao Yuchi and Min Song, "Moving Target Defense for Distributed Systems," Springer, ISBN 978-3-319-31031-2, 2016
4. D. B. Rawat, M. Song, and **Sachin Shetty**, "Dynamic Spectrum Access for Wireless Networks," SpringerBriefs of Electrical and Computer Engineering, ISBN 978-3-319-15298-1 Springer Verlag, 2015

Refereed Book Chapters

1. Ariful Haque, **Sachin Shetty**, Bheshaj Krishnappa, "CPS resilience: Frameworks, metrics, complexities, challenges and future directions", Complexity Challenges in Cyber Physical Systems: Using Modeling and Simulation (M&S) to Support Intelligence, Adaptation and Autonomy, Eds.: Saurabh Mittal and Andreas Tolk, Wiley, 2019.
2. **Sachin Shetty**, Xueping Liang, Dan Bowden, Juan Zhao, Lingchen Zhang, "Blockchain based Decentralized Accountability and Self Sovereignty in Healthcare Systems, *In: Business Transformation through Blockchain. Palgrave Macmillan, part of Springer (Nature)*; 2019. p. 119–149.

Refereed Journal Papers

1. Muhammad Saad, Jeffrey Spaulding, Laurent Njilla, Charles Kamhoua, **Sachin Shetty**, DaeHun Nyang, and David Mohaisen, "Exploring the Attack Surface of Blockchain: A Comprehensive Survey", IEEE Communications Surveys & Tutorials, 2020 (**Impact Factor – 23.7**)
2. Kjartan Palsson, Steinn Guðmundsson, **Sachin Shetty**, "Analysis of the impact of cyber events for cyber insurance," in The Geneva Papers on Risk and Insurance - Issues and Practice, 2020 (**Impact Factor – 0.867**)
3. M. Wazid, A.K. Das, **Sachin Shetty**, M. Jo, "A Tutorial and Future Research for Building a Blockchain-Based Secure Communication Scheme for Internet of Intelligent Things," in IEEE Access, Vol. 8, pp. 1-17, 2020 (**Impact Factor – 3.745**)

4. Deepak Tosh, Sachin Shetty, Xueping Liang, Charles Kamhoua, Laurent Njilla, "Data Provenance in the Cloud: A Blockchain-Based Approach," in *IEEE Consumer Electronics Magazine*, vol. 8, no. 4, pp. 38-44, July 2019. **(Impact Factor – 3.373)**
5. Mohammad Wazid, P. Bagga, Ashok Kumar Das, Sachin Shetty, Joel J. P. C. Rodrigues, and Yongho Park. "AKM-IoV: Authenticated Key Management Protocol in Fog Computing-Based Internet of Vehicles Deployment," in *IEEE Internet of Things Journal*, 2019 **(Impact Factor 9.515)**
6. Hellen Maziku, Sachin Shetty, David Nicol, "Security Risk Assessment for SDN-enabled Smart Grids", *Computer Communications*, vol 33, pp. 1-11, January 2019 **(Impact Factor – 2.766)**
7. Juan Zhao, Sachin Shetty, Jan Wei Pan, Charles Kamhoua, Kevin Kwiat, "Transfer Learning for Detecting Unknown Network Attacks", *EURASIP Journal on Information Security*, vol. 1, pp. 1-13, February 2019. **(Impact Factor – 1.482)**
8. Sachin Shetty, Michael McShane, Linfeng Zhang, Jay Kesan, Charles A. Kamhoua, Kevin Kwiat, Laurent Njilla, "Reducing Informational Disadvantages to Improve Cyber Risk Management", *Geneva Risk and Insurance Review*, vol. 43, pp. 224-238, April 2018 **(Impact Factor – 0.625)**
9. Xueping Liang, Sachin Shetty, Deepak Tosh, Peter Foytik, Lingchen Zhang, "A Reliable Data Provenance and Privacy Preservation Architecture for Business-Driven Cyber-Physical Systems Using Blockchain", *International Journal of Information Security and Privacy (IJISP)*, vol 12, pp. 68-81, 2018.
10. [Lubna Elsaid](#), [Leonardo Jiménez Rodríguez](#), [Nghị H. Tran](#), Sachin Shetty, [Shivakumar Sastry](#), "Secrecy Rates and Optimal Power Allocation for Full-Duplex Decode-and-Forward Relay Wire-Tap Channels,". *IEEE Access*, vol. 5, pp. 10469-10477, 2017. **(Impact Factor – 4.098)**
11. [Cuong Dang](#), [Leonardo Jiménez Rodríguez](#), [Nghị H. Tran](#), Sachin Shetty, [Shivakumar Sastry](#), "On Secrecy Rate and Optimal Power Allocation of the Full-Duplex Amplify-and-Forward Relay Wire-Tap Channel," *IEEE Trans. Vehicular Technology* vol. 66, pp. 3887-3899, May 2017 **(Impact Factor – 2.248)**
12. [Danda B. Rawat](#), Sachin Shetty, [Chunsheng Xin](#), "Stackelberg-Game-Based Dynamic Spectrum Access in Heterogeneous Wireless Systems," *IEEE Systems Journal*, vol. 10, pp. 1494-1504, 2016 **(Impact Factor – 4.463)**
13. [Danda B. Rawat](#), Sachin Shetty, "Game Theoretic Cloud-Assisted Opportunistic Spectrum Access in Cognitive Radio Networks," *International Journal of Grid and High Performance Computing*, vol. 8, pp. 94-110, 2016
14. Ashraf Al Sharah, Taiwo Oyedare, and Sachin Shetty, "Detecting and Mitigating Smart Insider Jamming Attacks in MANETs Using Reputation-Based Coalition Game," *Journal of Computer Networks and Communications*, vol. 1, pp. 1-13, 2016
15. J. Rodriguez, N. H. Tran, T. Q. Duong, T. Le-Ngoc, M. ElKashlan, and Sachin Shetty, "Physical Layer Security in Wireless Cooperative Relay Networks: State-Of-The-Art and Beyond," *IEEE Commun. Magazine*, vol. 53, pp.32-39, December 2015. **(Impact Factor – 10.356)**

16. A. D. Le, S. Herath, N. H. Tran, T. Q. Duong, and S. Shetty, "Achievable Rates and Outage Probability of Cognitive Radio with Dynamic Frequency Hopping Under Imperfect Spectrum Sensing", *IET Commun.*, vol. 9, pp. 2160-2167, November 2015. (**Impact Factor – 1.779**)
17. Danda Rawat, Sachin Shetty and Chunsheng Xin , "Stackelberg Game based Dynamic Spectrum Access in Heterogeneous Wireless Systems," *IEEE Systems Journal*, 2014.
18. Danda Rawat, Sachin Shetty and Khurram Raza, "Geolocation-aware Resource Management in Cloud Computing Based Cognitive Radio Networks", Special Issue on Information Assurance and System Security in Cloud Computing, *International Journal of Cloud Computing*, 2013
19. Bhed Bahadur Bista, Danda Rawat, Sachin Shetty and Gongjun Yan, "Waiting Probability Analysis for Opportunistic Spectrum Access", *International Journal of Adaptive and Innovative Systems*, 2013.
20. Sachin Shetty, Meena Thanu, Ravi Ramachandran, "Cognitive Radio: Primary User Emulation Attacks and Remedies", *Journal of Recent Patents on Computer Science*, Special Issue on Recent Advances in Cognitive Radio Communications, Bentham Science Publishers Ltd., Vol. 5, No 2, 2012
21. Ying Tang, David Carbonetta, Sachin Shetty, "Development of an Integrated Network Visualization and Graph Analysis Tool for Biological Networks", *Int. J. Computational Biology and Drug Design*, June 2012
22. Gayathri Shivaraj, Min Song and Sachin S. Shetty, "Using Hidden Markov Models to detect Rogue Access Points", *Security and Communication Networks*, Volume 3, Issue 5, pages 394–407, October 2010.
23. Sachin S. Shetty, Ying Tang and William Collani, "A Cross-Layer Packet Loss Identification Scheme to Improve TCP Veno Performance", *International Journal of Computer Networks*, Volume 1, Issue 1, pages 36-45, November 2009
24. Sachin Shetty, Min Song, Youjun Yang, and Mary Mathews, "Learning Bayesian Network over Distributed Databases Using Majority-based Method", *Journal of Computational Methods in Science and engineering* , Volume 9 Issue 1, Pages 53-68, April 2009.

Refereed Conference Papers

1. Sharif Ullah, **Sachin Shetty**, Amin Hassanzadeh, Anup Nayak and Kamrul Hasan, "On the Effectiveness of Intrusion Response Systems against Persistent Threats", *IEEE ICNC*, Hawaii, 2020
2. Ariful Haque, **Sachin Shetty**, Bheshaj Krishnappa, "Modeling Cyber Resilience for Energy Delivery Systems Using Critical System Functionality," *Resilience Week*, San Antonio, TX, 2019
3. Kamrul Hasan, Sachin Shetty; Sharif Ullah, Amin Hassanzadeh, Ethan Hadar, " Towards Optimal Cyber Defense Remediation in Energy Delivery Systems", *IEEE Globecom*, Hawaii, 2019

4. Marco Gamarra, Sachin Shetty, Oscar Gonzalez, David Nicol, Laurent Njilla, "Modeling Stepping Stone Attacks with Constraints in Cyber Infrastructure", IEEE Globecom, Hawaii, 2019
5. Sarada Prasad Gochhayat; Eranga Herath; Sachin Shetty; Peter Foytik "Yugala: Blockchain based Encrypted Cloud Storage for IoT Data", IEEE Blockchain, 2019
6. Md Ali Reza Al Amin, Sachin Shetty, Laurent Njilla, Deepak Tosh and Charles Kamhoua "Online Cyber Deception System using Partially Observable Monte-Carlo Planning Framework", Securecomm, Orlando, 2019
7. Sharif Ullah, Sachin Shetty, Anup Nayak, Amin Hassanzadeh and Kamrul Hasan "Cyber Threat Analysis based on Characterizing Adversarial Behavior for Energy Deliver System", Securecomm , Orlando, 2019
8. Marco Gamarra, Sachin Shetty, Oscar Gonzalez, Laurent Njilla, Marcus Pendleton, Charles Kamhoua, "Dual redundant cyber-attack tolerant control systems strategy for cyber-physical systems", IEEE ICC, May 2019
9. Md Ariful Haque, Gael Kamdem De Teyou, Sachin Shetty, Bheshaj Krishnappa, "Cyber Resilience Framework for Industrial Control Systems: Concepts, Metrics, and Insights", IEEE Intelligence and Security Informatics (ISI), Miami FL, November 8 - 10, 2018
10. Sharif Ullah, Sachin Shetty, Amin Hassanzadeh, "Towards Modeling Attacker's Opportunity for Improving Cyber Resilience in Energy Delivery Systems", Resilience Week, Denver August 2018.
11. Asmah Muallem, Sachin Shetty, Liang Hong, Jan Wei Pan, "TDDEHT: Threat Detection Using Distributed Ensembles of Hoeffding Trees on Streaming Cyber Datasets", Milcom, Los Angeles, October 2018.
12. Deepak Tosh, Sachin Shetty, Peter Foytik, Laurent Njilla, Charles Kamhoua, "Blockchain Empowered Secure Internet-of-Battlefield Things (IoBT) Architecture", Milcom, Los Angeles, October 2018.
13. Kamrul Hasan, Sachin Shetty, Amin Hassanzadeh, Malek Ben Salem, Jay Chen, "Self-Healing Cyber Resilient Framework for Software Defined Networking-enabled Energy Delivery System", IEEE Conference on Control Technology and Applications (CCTA), Copenhagen, Denmark, August 2018 (Invited Paper).
14. Kamrul Hasan, Sachin Shetty, Amin Hassanzadeh, Malek Ben Salem and Jay Chen "Modeling Cost of Countermeasures in Software Defined Networking-enabled Energy Delivery System," IEEE Conference on Communications and Network Security (CNS) 30 May-1 June 2018, Beijing China
15. Marco Gamarra, Sachin Shetty, Oscar Gonzalez, David Nicol, Charles A. Kamhoua, Laurent Njilla, "Analysis of Stepping Stone Attacks in Dynamic Vulnerability Graphs," IEEE International Conference on Communications (ICC) 20-24 May 2018, Kansas City, MO, USA
16. Deepak Tosh, Sachin Shetty, Peter Foytik, Charles Kamhoua, Laurent Njilla, "CloudPoS: A Proof-of-Stake Consensus Design for Blockchain Integrated Cloud", IEEE International Conference on Cloud Computing (Cloud 2018), July 2-7, 2018, San Francisco, CA, USA, August 2018 (Acceptance ratio: 15 %)

17. Xueping Liang, Sachin Shetty, Deepak Tosh, Yafei Ji, Danyi Li, "Towards a Reliable and Accountable Cyber Supply Chain in Energy Delivery System using Blockchain", 14th EAI International Conference on Security and Privacy in Communication Networks (SecureComm), August 2018 (Acceptance ratio: 30.5%=33/108)
18. Hellen Maziku, Sachin Shetty, Dong Jin, Charles A. Kamhoua, Laurent Njilla, Kevin Kwiat, "Diversity Modeling to Evaluate Security of Multiple SDN Controllers," 2018 International Conference on Computing, Networking and Communications (ICNC): Communications and Information Security Symposium - Communications and Information Security, Maui, Hawaii, March 5-8, 2018
19. Xueping Liang, Sachin Shetty, Juan Zhao, Daniel Bowden, Danyi Li and Jihong Liu, "Towards Decentralized Accountability and Self-Sovereignty in Healthcare Systems," The 19th International Conference on Information and Communications Security (ICICS 2017), Beijing, China, Dec 2017
20. Xueping Liang, Sachin Shetty, Deepak Tosh, Peter Foytik and Lingchen Zhang, "Towards a Trusted and Privacy Preserving Membership Service in Distributed Ledger using Intel Software Guard Extensions," The 19th International Conference on Information and Communications Security (ICICS 2017), Beijing, China, Dec 2017
21. Deepak Tosh, Sachin Shetty, Xueping Liang, Charles A. Kamhoua, Laurent Njilla, "Consensus Protocols for Blockchain-based Data Provenance: Challenges and Opportunities," 2017 IEEE 8th Annual Ubiquitous Computing, Electronics and Mobile Communication Conference (UEMCON) (Short Paper), NY, October 19-21, 2017
22. Deepak Tosh, Iman Vakili, Sachin Shetty, Shamik Sengupta, Charles A. Kamhoua, Laurent Njilla, Kevin Kwiat, "Three Layer Game Theoretic Decision Framework for Cyber-Investment and Cyber-Insurance," GameSec 2017, 8th Conference on Decision and Game Theory for Security, Vienna, Austria, October 23-25, 2017
23. Xueping Liang, Juan Zhao, Sachin Shetty, Jihong Liu, Danyi Li, "Integrating Blockchain for Data Sharing and Collaboration in Mobile Healthcare Applications," IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, 08-13 October 2017, Montreal, QC, Canada
24. Xueping Liang, Juan Zhao, Sachin Shetty, Danyi Li, "Towards Data Assurance and Resilience in IoT Using Distributed Ledger," IEEE Milcom, October 23-25, 2017, Baltimore, MD, USA
25. Juan Zhao, Sachin Shetty, Jan Wei Pan, "Feature-Based Transfer Learning for Network Security," IEEE Milcom, October 23-25, 2017, Baltimore, MD, USA
26. Laila Almutairi and Sachin Shetty, "Generalized Stochastic Petri Net Model Based Security Risk Assessment of Software Defined Networks," IEEE Milcom, October 23-25, 2017, Baltimore, MD, USA
27. Xueping Liang, Sachin Shetty, Lingchen Zhang, Charles Kamhoua, Kevin Kwiat, "Man in the Cloud (MITC) Defender: SGX-based User Credential Protection for Synchronization applications in Cloud Computing Platform," IEEE Cloud, June 25 - June 30, 2017, Honolulu, Hawaii, USA
28. Uttam Ghosh, Pushpita Chatterjee, Deepak Tosh, Sachin Shetty, Kaiqi Xiong, Charles Kamhoua, "A SDN based Framework for Guaranteeing Security and Performance in

- Information Centric Cloud Networks", IEEE Cloud (short paper), June 25 - June 30, 2017, Honolulu, Hawaii, USA
29. Uttam Ghosh , Pushpita Chatterjee and Sachin Shetty, " A Security Framework for SDN Enabled Power Grid", IEEE International workshop on Communication, Computing, and Networking in Cyber Physical Systems, In association with IEEE the 37th International Conference on Distributed Computing Systems (IEEE ICDCS 2017), June 5 - 8, 2017, Atlanta, GA, USA
 30. Xueping Liang, Sachin Shetty,Deepak Tosh, Charles Kamhoua, Kevin Kwiat, Laurent Njilla, "ProvChain: A Blockchain-based Data Provenance Architecture in Cloud Environment with Enhanced Privacy and Availability", The 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID), May 14-17 2017.
 31. Deepak Tosh Sachin Shetty, Xueping Liang, Charles Kamhoua, Kevin Kwiat, Laurent Njilla, "Security Implications of Blockchain Cloud with Analysis of Block Withholding Attack", 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID), May 14-17 2017.
 32. Sachin Shetty, Val Red, David Satterfield, Charles Kamhoua, Kevin Kwiat and Laurent Njilla, "Data Provenance Assurance in Cloud Using Blockchain", SPIE Defense + Security Conference, Anaheim CA, April 9-13, 2017.
 33. Hellen Maziku and Sachin Shetty, "Software Defined Networking enabled Resilience for IEC 61850-based Substation Communication Systems", Workshop on Computing, Networking and Communications (CNC), January 2017 , Silicon Valley, USA.
 34. Kamrul Hasan, Sachin Shetty, and Taiwo Oyedare, "Cross Layer Attacks on Mobile Networks Using Software Defined Radios", 14th Annual IEEE Consumer Communications & Networking Conference (CCNC 2017), January, 2017, Las Vegas, USA.
 35. Deepak Tosh, Sachin Shetty, Shamik Sengupta, Jay Kesan and Charles Kamhoua, "Risk Management using Cyber-Threat Information Sharing and Cyber-Insurance ", GameNets 2017(Invited Paper)
 36. Abdullah Alghamdi and Sachin Shetty, "Survey: Toward A Smart Campus Using the Internet of Things", 4th International Conference on Future Internet of Things and Cloud (FiCloud-2016), August 2016, Vienna, Austria.
 37. Robert W. Mudrowsky, Ravi Ramachandran, Umashanger Thayasivam, and Sachin S. Shetty, "Robust Speaker Recognition in the Presence of Speech Coding Distortion for Remote Access Application", 12th International Conference on Data Mining, July 2016, Las Vegas, USA
 38. Esther Amullen, Sachin Shetty, L.H. Keel , "Secured Formation Control for Multi-agent Systems Under DoS Attacks", IEEE International Symposium on Technologies for Homeland Security, May 2016, Waltham. MA
 39. Esther Amullen, Sachin Shetty, L.H. Keel, "Model-based resilient control for a multi-agent system against Denial of Service attacks", IEEE World Automation Congress, July 2016, Puerto Rico
 40. Xuebiao Yuchi and Sachin Shetty, "Towards Network-topology aware Virtual Machine Placement in Cloud Datacenters", IEEE Cloud, June 2016, San Francisco, CA
 41. Xuebiao Yuchi and Sachin Shetty, "Hierarchical Random Graph based Network Diversity Modeling for the Cloud", IEEE Cloud, June 2016, San Francisco, CA

42. Wei Chen, Liang Hong and Sachin Shetty, "Cross-layered Security Approach with Compromised Nodes Detection in Cooperative Sensor Networks", 18th Workshop on Advances in Parallel and Distributed Computational Models, May 2016
43. Paul Mcneil, Sachin Shetty, Divya Guntu and Gauree Barve, "SCREDDENT: Scalable Real-time Anomalies Detection and Notification of Targeted Malware in Mobile Devices", 7th International Conference on Ambient Systems, Networks and Technologies (ANT-2016)-International Workshop on Mobile Cloud Computing systems, Management, and Security, May 2016.
44. Taiwo Oyedare, Ashraf Al Sharah and Sachin Shetty, "A Reputation-Based Coalition Game to Prevent Smart Insider Jamming Attacks in MANETs", 14th International Conference on Wired & Wireless Internet Communications (WWIC 2016), May 2016.
45. Ashraf Al Sharah and Sachin Shetty, Accumulative Feedback Adaptation Transmission Rate In Mobile Ad-hoc Network, IEEE International Conference and Workshop on Computing and Communication (IEMCON), October 2015.
46. Paul McNeil, Sachin Shetty, Divya Guntu and Gauree Barve " Scredent—Scalable Real-time Anomalies Detection and Notification of Targeted Malware in Smartphones", 24th Usenix Security Symposium (Poster), August 2015, Washington, D.C..
47. Depeng Li and Sachin Shetty, " Toward Energy-Wasting Misbehavior Detection Platform with Privacy Preservation in Building Energy Use", ACM CCS (Poster), October 2015, Denver, Co.
48. Xuebiao Yuchi and Sachin Shetty " Enabling Security-Aware Virtual Machine Placement in IaaS Clouds", Milcom, October 2015, Tampa FL.
49. Kimberly Gold, Sachin Shetty, and Tamara Rogers " A Testbed for modeling and detecting attacks on NFC enabled mobile devices", Milcom, October 2015, Tampa FL.
50. Vasanth Iyer and Sachin Shetty, "Virtual sensor tracking using byzantine fault tolerance and predictive outlier model for complex tasks recognition", SPIE DSS, April 2015, Baltimore, MD.
51. Vasanth Iyer and Sachin Shetty, "Statistical Methods in AI: Rare Event Learning using Associative Rules and Higher-Order Statistics" AI Matters ACM: Volume 1 Issue 3, March 2015.
52. Sachin Shetty, Husam Adas and Waled Tayib, "Scalable Detection of Web Malware on Smart phones," 2015 International Conference on Information and Communication Technology Research (ICTRC2015), May 2015, Dubai, UAE.
53. Sai Kiran Mukkavilli, Sachin Shetty, Liang Hong, "Generation of Realistic Datasets to Evaluate Impact of Attacks on Cloud Data Center," 2015 International Conference on Next Generation Computing and Communication Technologies, April 2015, Dubai UAE
54. Biswajit Biswal, Sachin Shetty and Tamara Rogers, "Enhanced Learning Classifier to Locate Data in Cloud Datacenters", IEEE CloudNet, October 2014, Luxembourg
55. Hellen Maziku and Sachin Shetty, "Towards a Network Aware VM Migration: Evaluating the Cost of VM Migration in Cloud Data Center", IEEE CloudNet, October 2014, Luxembourg
56. Lingchen Zhang, Sachin Shetty, Peng Liu and Jiwu Jing "RootkitDet: Practical End-to-End Defense against Kernel Rootkits in a Cloud Environment", European Symposium on Research in Computer Security, Wroclaw, Poland, September 2014 .

57. Sachin Shetty, Tayo Adedokun, L.H. Keel, "CyberPhySecLab: A testbed for modeling, detecting and responding to security attacks on Cyber Physical Systems", ASE Cyber Security Conference, Stanford, CA, May 2014.
58. Pan Gao, Henrique Momm and Sachin Shetty, "Exploration of optimal parameters of the genetic algorithm applied in feature extraction from remote sensed imagery," Pecora Memorial Remote Sensing Symposium, Nov 2014, Denver
59. D. A. Le, N. H. Tran, Sachin Shetty, and Shivakumar Sastry, , ""Achievable Rate and Outage Probability of Cognitive Radio with Finite-Alphabet Inputs Under Imperfect Spectrum Sensing," in Proc. IEEE Veh. Tech. Conf. (VTC), Glasgow, Scotland, May 2015.
60. Cuong Dang, Leonardo Jimenez Rodriguez, Nghi Tran, Sachin Shetty, and Shivakumar Sastry, , ""Secrecy Capacity of the Full-Duplex AF Relay Wire-Tap Channel under Residual Self-Interference," IEEE Wireless Communications and Networking Conference (WCNC), March 2015, New Orleans
61. Danda Rawat, Swetha Reddy, Nimish Sharma, Bhed Bahadur Bista, and Sachin Shetty , "Cloud-assisted GPS-driven Dynamic Spectrum Access in Cognitive Radio Vehicular Networks for Transportation Cyber Physical Systems," IEEE Wireless Communications and Networking Conference (WCNC), March 2015, New Orleans
62. Sachin Shetty and Danda Rawat, , ""ROAR- Real-time Opportunistic Spectrum Access in Cloud based Cognitive Radio Networks," NSF Cloud Workshop, Dec 2014, Washington D.C.
63. Danda Rawat, Swetha Reddy, Nimish Sharma, and Sachin Shetty , ""Cloud-assisted Dynamic Spectrum Access for VANET in Transportation Cyber-Physical Systems," Proc. of IEEE 33rd International Performance Computing and Communications Conference (IEEE IPCCC 2014), December 5-7, 2014, Austin Texas, USA
64. Laila Almutairi, Sachin Shetty and Henrique Momm, "Scalable evolutionary computation for efficient information extraction from remote sensed imagery," Pecora Memorial Remote Sensing Symposium, Nov 2014, Denver
65. Biswajit Biswal, Sachin Shetty, Tamara Rogers, "Classification Based IP Geolocation Approach to Locate Data in the Cloud Datacenters", ASE Cyber Security Conference, Stanford, CA, May 2014.
66. Hellen Maziku and Sachin Shetty, "Network Aware VM Migration in Cloud Data Centers", Global Environment for Network Innovations (GENI) Research and Educational Experiment Workshop, March 19-20, 2014, Atlanta, GA
67. Danda Rawat, Sachin Shetty, Khurram Raza, "Game Theoretic Dynamic Spectrum Access in Cloud-based Cognitive Radio Networks," IEEE International Workshop on Software Defined Systems, 2014
68. Md. Monzurul Alam, Sudeep Bhattarai, Liang Hong and Sachin Shetty, ""Robust Beamforming for Cognitive Radio Based Vehicular Communication", International Conference on Connected Vehicles and Expo, Dec 2013.
69. Danda Rawat and Sachin Shetty , "Game Theoretic Approach to Dynamic Spectrum Access with Multi-radio and QoS Requirements ", IEEE GlobalSIP, Dec 3-5, 2013.
70. Sudeep Bhattarai, Liang Hong, Sachin Shetty, "Optimum Transmit Beamforming Scheme for Underlay Cognitive Radio Networks", International Symposium on Wireless Personal Multimedia Communications, Atlantic City, New Jersey, June 24 - 27, 2013.

71. Robert Nix, Murat Kantarcioglu, Sachin Shetty, "Real-time tools for cloud auditing", IEEE Workshop on Cloud Security Auditing, June 27, 2013, Santa Clara, CA.
72. Sachin Shetty, "Auditing and Analysis of Network Traffic in Cloud Environment", IEEE Workshop on Cloud Security Auditing, June 27, 2013, Santa Clara, CA.
73. Swetha Reddy Lenkala, Sachin Shetty, and Kaiqi Xiong, "Security Risk Assessment of Cloud Carrier", IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), May 13-16, 2013, Delft, Netherlands.
74. Husam Adas, Sachin Shetty, and S. K. Hargrove, "Virtual and Augmented Reality Based Assembly Design System for Personalized Learning", IEEE Science and Information Conference, October 7 - 9, 2013, London, United Kingdom.
75. Asmah Muallem, Sachin Shetty, and S. K. Hargrove, "Visualizing Geolocation of Spam Email", IEEE Computing, Communications and Applications Conference (ComComAp), April 1-5, 2013, Hong Kong.
76. Kalpesh Raval, Ravi P. Ramachandran, Sachin Shetty, and Brett Smolenski, "Feature and Signal Enhancement for Robust Speaker Identification of G.729 Decoded Speech", 19th International Conference on Neural Information Processing (ICONIP2012), Doha, Qatar, November 2012.
77. Bhed Bahadur Bista, Danda B. Rawat, Gongjun Yan, Sachin Shetty, "Waiting Probability Analysis for Dynamic Spectrum Access in Cognitive Radio Networks", The 7th International Conference on Complex, Intelligent, and Software Intensive Systems (CISIS 2013) July 3rd - July 5th, 2013, Taichung, Taiwan
78. Danda Rawat, Sachin Shetty, Khurram Raza, "Secure Radio Resource Management in Cloud Computing Based Cognitive Radio Networks", 4th International Workshop on Security in Cloud Computing, Pittsburgh, PA, September 2012.
79. Umashanger Thayasivam, Sachin Shetty, Chinthaka Kuruwita, Ravi Ramachandran, "Detection of Anomalies in Network Traffic Using L2E for Accurate Speaker Recognition", 55th Int'l Midwest Symposium on Circuits & Systems, Boise, August 2012.
80. Hellen Maziku, Sachin Shetty, Keesook Han, Tamara Rogers, "Enhancing the Classification Accuracy of IP Geolocation", Proc. of Military Communications Conference, Orlando, Florida, Nov 2012.
81. Nicholas Luna, Sachin Shetty, Tamara Rogers, Kaiqi Xiong, "Assessment of Router Vulnerabilities on PlanetLab Infrastructure for Secure Cloud Computing", First GENI Research and Educational Experiment Workshop, March 15-16, 2012, Los Angeles
82. Hellen Maziku, Sachin Shetty, Tamara Rogers, "Measurement-based IP geolocation of Routers on PlanetLab Infrastructure", First GENI Research and Educational Experiment Workshop, March 15-16, 2012, Los Angeles
83. Sachin Shetty, Nicholas Luna, Kaiqi Xiong, "Assessing Network Path Vulnerabilities for Secure Cloud Computing", IEEE ICC Workshop on Clouds, Networks and Data Centers, June 10-15, 2012, Ottawa, Canada.
84. Ying Tang, David Carbonetta, Sachin Shetty, "Development of an Integrated Network Visualization and Graph Analysis Tool for Biological Networks", International Conference on Intelligent Biology and Medicine (ICIBM), April 2012

85. R. P. Ramachandran, R. Polikar, K. D. Dahm and Sachin Shetty, "Open-Ended Design and Performance Evaluation of a Biometric Speaker Identification System", IEEE International Symposium on Circuits and Systems, Seoul, South Korea, May 20-23, 2012.
86. Sachin Shetty, Kodzo Agbedanu, Ravi Ramachandran, "Opportunistic Spectrum Access in Multi-User Multi-Channel Cognitive Radio Networks," IEEE EUSIPCO, August 29 - Sep 2, 2011, Barcelona, Spain,
87. Y. Tang, Sachin Shetty, "Adaptive Virtual Reality Game System for Personalized Problem Based Learning," 2011 IEEE International Conference on Networking, Sensing and Control, April 11-13, 2011, Delft, Netherlands.
88. McKenzie McNeal III, Wei Chen, Sachin Shetty, Stanley Aungst, "Security-Oriented Robust Networking Architecture and Key Management for Heterogeneous Wireless Sensor Networks", 2011 International Conference on Wireless Networks, July 18-21, 2011, Las Vegas, USA
89. Y. Tang, Sachin Shetty, J. Kauser, S.K.Hargrove, and J. Henry, "Virtual Reality Games in Promoting Metacognition for Science and Engineering Design in Context," ASEE Annual Conference, June 26-29, 2011, Vancouver, BC, Canada
90. Saleh Zein-Sabatto, Abduliqadir Khoshnaw, Sachin Shetty, Mohan Malkani, Atindra K. Mitra, "Cross layers decision fusion model in layered sensing systems," Proc. of SPIE, Apr 2011
91. Tang, Y., Sachin Shetty, and Chen, X. F, "Empowering Students with Engineering Literacy and Problem-solving through Interactive Virtual Reality Games," 2nd International IEEE Consumer Electronics Society Games Innovation Conference, Hong Kong, Dec. 21-23, 2010.
92. Sachin Shetty, Ying Tang, William Collani, "TCP Venoplus - A cross-layer approach to improve TCP Performance in wired-cum-wireless networks using signal strength", Proc. of IEEE Networking, Sensing and Control, June 2010.
93. Sachin Shetty and Ravi Ramachandran, "Blind Channel Estimation Based Robust Physical Layer Key Generation in MIMO Networks", *IEEE Int. Symp. On Circuits and Systems*, Paris, France, June 2010.
94. Chunsheng Xin, Min Song, Liangping Ma, Sachin Shetty, and C.C. Shen, "Control-Free Dynamic Spectrum Access for Cognitive Radio Networks," *Proc. of IEEE ICC*, May 2010.
95. Gang Zhou, Sachin Shetty, George Simms, Min Song, "PLL Based Time Synchronization in Wireless Sensor Networks", IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA) (short paper), Beijing, China, August 2009
96. Sachin Shetty, Min Song, Chunsheng Xin, "A Learning-based Multiuser Opportunistic Spectrum Access Approach in Unslotted Primary Networks", IEEE INFOCOM, April 2009

Educational Research Publications

1. Husam Adas, Sachin Shetty, and S. K. Hargrove, "Virtual and Augmented Reality Based Assembly Design System for Personalized Learning", IEEE Science and Information Conference, October 7 - 9, 2013, London, United Kingdom.
2. R. P. Ramachandran, R. Polikar, K. D. Dahm and Sachin Shetty, "Open-Ended Design and

- Performance Evaluation of a Biometric Speaker Identification System", IEEE International Symposium on Circuits and Systems, Seoul, South Korea, May 20-23, 2012.
3. R. P. Ramachandran, L. Hong, S. S. Shetty, K. D. Dahm, R. J. Kozick, R. M. Nickel, R. Polikar, Y. Tang and S. H. Chin, "Design and Performance Evaluation of a Biometric Iris Verification System", ASEE Annual Conference and Exposition, Seattle, Washington, 2015
 4. R. P. Ramachandran, K. D. Dahm, R. Nickel, R. Kozick, S. S. Shetty, L. Hong, S. H. Chin, R. Polikar and Y. Tang, "Vertical Integration of Biometrics Across the Curriculum: Case Study of Speaker, Face and Iris Recognition," IEEE Circuits and Systems Magazine, 2014
 5. Ying Tang, Sachin Shetty, Talbot Bielefeldt, Kauser Jahan, John Henry, and S. Keith Hargrove, "Sustain City - A Cyberinfrastructure-Enabled Game System for Science and Engineering Design", Journal of Computational Science Education, Vol 3. Issue 1, pages 57-65, May 2012
Y. Tang, Sachin Shetty, "Adaptive Virtual Reality Game System for Personalized Problem Based Learning," 2011 IEEE International Conference on Networking, Sensing and Control, April 11-13, 2011, Delft, Netherlands.
 6. Ying Tang, Sachin Shetty, J. Kauser, S.K. Hargrove, and J. Henry, "Virtual Reality Games in Promoting Metacognition for Science and Engineering Design in Context," ASEE Annual Conference, June 26-29, 2011, Vancouver, BC, Canada
 7. Tang, Y., Sachin Shetty, and Chen, X. F, "Empowering Students with Engineering Literacy and Problem-solving through Interactive Virtual Reality Games," 2nd International IEEE Consumer Electronics Society Games Innovation Conference, Hong Kong, Dec. 21-23, 2010.
 8. Ying Tang, Sachin Shetty, John Henry, Kauser Jahan, and Samuel Hargrove (2013). Game Effectiveness of Power Ville in Promoting Science and Engineering Design. ASEE Annual Conference. Atlanta, GA.
 9. Ying Tang, Sachin Shetty, John Henry, Kauser Jahan, and Samuel Hargrove, "Interactive and Collaborative Games Promoting Metacognition for Science and Engineering Design", Proceedings of International Conference on Computer Science and Education, July 9-10, 2011, Qingdao, China

Invited Talks

1. Cyber Risk Scoring and Mitigation, Turbo Transition, US Transcom, June 2019
2. Blockchain for Distributed Systems Security Symposium, Army Research Lab, Adelphi, MD, February 5, 2019
3. Cyber Risk Scoring and Mitigation, Purdue Northwest University Seminar, February 8, 2019
4. Bloxure Presentation and Demonstration, HIMSS, Feb 10-14, 2019
5. A Proof-of-Stake Consensus Design for Blockchain Integrated Cloud, Applications and Barriers to Consensus Protocols Workshop, DARPA, February 15, 2019 (**Competitive Selection**)
6. Panel Discussion - Leading Cybersecurity: Planning for Data Privacy and Security, Healthcare Administrators of Tidewater, February 27, 2019

7. Cyber security research, Air Force Institute of Technology, January 23-24, 2019
8. GNU Radio empowered RF Classification toolbox, Counter UAS Tech Exchange Meeting, John Hopkins University, January 16, 2019
9. "Blockchain & AI Technology: New Tools for Cyber Defense", AAAE/Planet Defense Aviation Cybersecurity Workshop, Arlington, VA, December 23, 2018
10. "Cyber Risk Scoring and Mitigation for Resilient Cyber Infrastructure", University of Illinois ITI/CIRI Webinar Series, December 13, 2018
11. "Transfer Learning for Detecting Unknown Attacks in Autonomous", Workshop on Autonomous Cyber Operations, Baltimore, Maryland, November 5-6 2018 (**Competitive Selection**)
12. Panel Talk, "How to become a skilled researcher", Career Pathways, November 2, 2018
13. "Blockchain and Process Control Systems Security", *Supply Chain Cybersecurity & Cloud-based Services Workshop*, October 23, 2018, FortWorth, Texas.
14. "Cyber Resilience Metrics", EPRI Webinar, October 18, 2018
15. "Blockchain Research Overview", ODU CyberOps, October 19, 2018
16. Panel Discussion, "Real-World Look at Blockchain- Its hear to stay", WEDI Blockchain Conference, Arlington, VA, October 15-17, 2018
17. "Blockchain for Cyber Supply Chain Provenance", AFPM/OPCAT Cybersecurity Conference, Atlanta, GA, October 1, 2018 (**Competitive Selection**)
18. "Blockchain for Energy Delivery Systems", Argonne National Laboratory (ANL) DOE CEDS Outreach Energy Sector Industry Advisory Team (IAT), Third Quarter Teleconference Call, September 18, 2018.
19. "Blockchain and IoT Security", VA-DC HFMA Fall Education Conference, September 19-21, 2018, Virginia Beach, VA
20. "Showcase- Academia and Industry Partnership – Cyber Resilience Metrics", DoE CREDC Industry Workshop, Boston, MA, September 11-13, 2018 (**Competitive Selection**)
21. "Blockchain and Cyber Security", ODU NSA project on Blockchain and Cybersecurity, August 27, 2018
22. "Cyber Risk Scoring and Mitigation", US PACOM Webinar, May 17, 2018
23. Panel Discussion, "Blockchain and Cyber Security, VA HIMMS, April 27, 2018
24. "Cyber Risk Scoring for Wireless Systems", C-UAS and JCREW Advanced Techniques Development Technical Exchange Meeting, Crane Indiana, March 12-15, 2018
25. Panel Discussion, "Hybrid Simulation for Cyber Physical Systems – A Panel on where are we going regarding complexity, intelligence and adaptability of CPS using Simulation", April 15, 2018, SpringSim Conference (**Competitive Selection**)
26. ODU Cyber security Outreach, Southampton County Public Schools, CTE Cyber Security Career Expo: February 28, 2018
27. "Blockchain for Healthcare Security", Healthcare Informatics, Health IT Summit, San Diego, CA, Feb 1, 2018
28. "Blockchain empowered cyber threat sharing platform", US Transcom, December 2017
29. "Provchain- A blockchain based data provenance for cloud computing", MITRE, November 2017
30. "Blockchain and Data Provenance", CERDEC, November 2017
31. "Blockchain based Trusted Information Sharing", NATO Workshop, October 2017

32. "Networked Identity Management of Internet of Things using Blockchain", AFPM Cyber security seminar, September 2017 (**Competitive Selection**)
33. "Blockchain in Healthcare- A Marriage of Hype and Promise", Healthcare Security Forum, HIMMS, Sep 2017
34. "Data Provenance Assurance using Blockchain in Cloud Environment", UTRC, March 2017
35. "Blockchain for Cloud Security", Air Force Space Command, January 2017.
36. "Towards Network Aware VM Migration – Evaluating the Cost of VM Migration in SDN-based Cloud Computing Network", Workshop on Science of Security through Software-Defined Networking, Illinois Institute of Technology, Chicago, IL, June 2016 (**Competitive Selection**)
37. "Moving Target Defense to protect Cloud DataCenters", University of Toledo, October 2015.
38. "Moving Target Defense", Derbycon, September 2015. (**Competitive Selection**)
39. "Moving Target Defense", Summer School, COINS Research Lab, Greece, August 2015 (**Competitive Selection**)
40. "Moving Target Defense for Distributed Systems", Distinguished Lecture Series, Naval Surface Warfare Center, November 2014
41. "RootKitDet: Practical End-to-End Defense Against Kernel RootKits in Cloud Data Centers", CyberBat/VFRP Presentation, AFRL, Rome, NY, July, 2014
42. "Scalable Machine Learning System in Cloud to Protect Smartphones from Malicious URLs", NIST The Intersection of Cloud and Mobility Cloud Enhancing Mobility Applications, National Institute of Standards and Technology, Gaithersburg MD , March 26, 2014
43. "IP Geolocation for locating data in Cloud", CyberBat/VFRP Presentation, AFRL, Rome, NY, July, 2013
44. "Massive IP/DNS analysis using data mining in Hadoop", Cloud Assumption Buster Workshop, NIST, Gaithersburg, MD, Oct 21, 2011
45. "Challenges and Success Stories in Homeland Security Education", Panel Member, DHS Center of Excellence Annual Meeting, Purdue University, West Lafayette, IN, Sep 13, 2011
46. "Massive Cloud Auditing using Data Mining in Hadoop", Assured Cloud Workshop, Information Institute, AFRL, Rome, NY, July 7, 2011
47. "Opportunistic Networking via Dynamic Spectrum Access", LANS Informal Seminar, Argonne National Laboratory, Jul 7 2010.
48. "Opportunistic Access in Cognitive Radio Networks", Department of Electrical and Computer Engineering, Old Dominion University, Oct 3, 2008.

Education: Mentoring Graduate Students

I have graduated 6 PhD and 19 MS students. I have received the TSU's Research Mentorship awards during 2013, 2014 and 2015. Below is a list of graduate students whom I serve as thesis advisor, along with their major accomplishments organized by year.

PhD Students

1. **Kamrul Hasan**, Expected Completion May 2020
2. **Md. Ali Reza Amin**, Expected Completion August 2020
3. **Ariful Haque**, Expected Completion, May 2021
4. **MD. Sharif Ullah**, Expected Completion December 2019
5. **Marco Gamarra**, Expected Completion December 2019
6. **Manoj Banik**, Expected Completion August 2020

PhD Graduates

1. **Ashraf Al Sharah** – PhD, May 2016

Integrated Game Theoretic and Network Integrity Scheme to Detect and Mitigate Insider Threats in MANETS and Colluding Jamming Attack

2. **Biswajit Biswal** – PhD, May 2016

Secure Measurement based Geolocation to Locate Data in the Cloud Datacenters

3. **Sai Kiran Mukkavilli** – PhD, August 2016

Network Traffic Anomaly Detection for IAAS Clouds

4. **Kimberly Gold** – PhD, August 2016

Multi-sensor fusion for secure mobile proximity detection

5. **Hellen Maziku** – PhD, December 2016

Towards Infrastructure Based Software Defined Security

6. **Paul McNeil** – PhD, August 2016

SCREDDENT: Scalable Real-time Anomalies Detection and Notification of Targeted Malware in Smartphones

M.S. Graduates

1. **Abdulkabir Bello** – MS, May 2019

Radio Frequency toolbox for drone Detection and Classification

2. **Ariful Haque** – MS, August 2018

Analysis of Bulk Power System Resilience Using Vulnerability Graph

3. **Kodanda Ram Reddy Tippy Reddy** – MS CISE, August 2016

Network-Aware Bandwidth Provisioning for Service Level Agreement Assurance

4. **Kamrul Hasan** – MS CISE, August 2016

Cross-Layer Attack on GSM Mobile Networks Using Software Defined Radios

5. **Taiwo Oyedare** – MS CISE, August 2016

A Reputation-Based Coalition Game to Detect and Prevent Insider Smart Jamming Attacks in Mobile Ad Hoc Networks

6. **James Savage** – MS CISE, May 2016

- Detection of Co-Resident Virtual Machines using Network Traffic Patterns
7. **Prasanthi Yughandhar** – MS CISE, May 2016
Dynamic Analysis of mobile botnet
 8. **Priya Chaurasia** – MS CISE, December 2015
Dynamic Analysis of Android Malware using Droidbox
 9. **Ayodeji Borode** - MS CISE, December 2015
Implementing Cloud Based Opportunistic Spectrum Access For Cognitive Radio Networks
 10. **Sabah Alzharani** – MS CISE, May 2015
Scalable Network Traffic Analysis On Cloud Computing Platform
 11. **Manu Misra** - MS CISE, May 2014
Network Bandwidth Provisioning for Ensuring Service Level Agreement (SLA)-based Service Guarantees
 12. **Pan Gao** - MS CISE, May 2014
Evolutionary Computation for Feature Extraction from Remotely Sensed Imagery
 13. **Prachi Mandil** - MS CISE, May 2014
Cloud-based Intrusion Detection and Response Tool for Android Smartphone Devices
 14. **Laila Almutairi** - MS CISE, May 2014
Scalable evolutionary computation for efficient information extraction from remote sensed imagery
 15. **Khurram Raza** - MS CISE, May 2014
Secure Radio Resource Management In Cloud Computing Based Cognitive Radio Networks
 16. **Husam Adas** - MS CISE, May 2013
Cloud Computing Based Detection Of Malicious URL Attacks On Android Smart Phones
 17. **Asmah Muallem** - MS CISE, May 2012
Visualizing Geolocation of Spam Email
 18. **Swetha Lenkala** - MS CISE, May 2012
Risk Assessment of Cloud Carrier
 19. **Hellen Maziku**- MS CISE, May 2012
Enhancing the classification accuracy of IP Geolocation
 20. **Ermias Tedla** - MS CISE, May 2011
Intercepting Filter Approach to Detect and Prevent SQL Injection Attacks on Vulnerable SQL Codes
 21. **Kodzo Agbedanu** - MS CISE, May 2010
Spectrum Access in Multi User Multi Channel Environment Using the Hungarian and Greedy Algorithms in a Cognitive Radio Network

Membership in Professional Societies

- Senior Member, the Institute of Electrical and Electronics Engineers (IEEE).

University Service

- Member of the Department of Computational Modeling and Simulation Engineering Tenure and Promotion Committee, 2016- present
- Member of the ODU's Career Pathways Steering Committee, 2017- present
- Member of the ODU's BCET Dean Search Committee, 2019
- Member of the ODU's BCET Associate Dean for Research and Graduate Programs Search Committee, 2017
- Serving as a member of the Tennessee State University Faculty Senate, 2014- 2017
- Serving as a member of the Tennessee State University Faculty Senate Research Committee, 2013- 2016
- Served on the search committee for the Associate Vice President of Research Position, 2013-2014
- Served on the faculty search committee for the Computer Science Department, 2012-2013
- Served as the proctor for IEEE Xtreme 4.0 Programming Competition, Oct 2010
- Served on the faculty professional development team for the NSF HBCU-UP Project, 2009-2011
- Served as the organizer of gaming and simulation workshop for students from Stratford Magnet High School, March 2013
- Served on the organizing committee for the Science Olympiad, February 2013
- Served as the Department Representative during the TSU Tiger High School Junior Jumpstart recruiting event, April 2013
- Served as Demonstrator for high school students in Engineering Week, April 2013

Professional Service

1. **Standard Committee Co-chair**
 - a. Subgroup chair on Internet of Medical Things in the IEEE P2418.6 Standards Development Working Group (Blockchain in Healthcare and Life Sciences) - <https://sagroups.ieee.org/2418-6/subgroups/>
2. **Journal Editor**
 - a. Serving on Editorial Board for EAI Endorsed Transactions for Security and Safety - <https://eudl.eu/journal/sesa>
3. **Panels**
 - a. Served on the panel for NSF CNS, NSF DUE and NSF HRD programs
 - b. Moderated panel on Smart Cities at Commonwealth Conference on National Defense and Intelligence, 2019
4. **Conference Track Co-Chair**
 - a. Serving as area chair for Security, Privacy, Trust and Incentives at ICCCN 2020
 - b. Serving as chair for cyber risk track at WinterSim 2020

- c. Serving as chair for cybersecurity engineering track at SpringSim2019 and SpringSim 2020

5. Workshop Co-Chair

- a. Served as chair for the workshop on Security Trust and Privacy in Emerging Cyber-Physical Systems held in conjunction with SECON 2019
- b. Served as chair for the 1st Light Chain workshop held in conjunction with IEEE Blockchain, Atlanta, 2019
- c. Organized workshop on Blockchain for Cyber Threat Information Sharing for NATO Innovation Hub, 2018
- d. Served as chair for the 1st International Workshop on Blockchain Enabled Sustainable Smart Cities (BLESS 2018), Kansas City, MO, USA, Sept. 19, 2018 In Conjunction with the 4th IEEE Annual International Smart Cities Conference (ISC2 2018)
- e. Served as chair for the 2nd International Workshop on Blockchain Enabled Sustainable Smart Cities (BLESS 2019), Casablanca, Morocco, October 14, 2019, held in conjunction with the 5th IEEE Annual International Smart Cities Conference (ISC2 2019)

6. Selected Technical Program committee

- IEEE International Conference on Communications (ICC): Communication and Information Systems Security Symposium, 2020
- IEEE International Conference on Computing, Networking and Communications, 2020
- IEEE International Conference on Distributed Computing and Networking, 2020, 2019, 2016
- ACM SIGSIM Conference on Principles of Discrete Simulation (PADS), 2019, 2020
- IEEE Cloud Summit, 2019
- EAI SecureComm, 2019
- EAI International Conference on Cloud Computing, 2018
- International Conference on IOT, 2016
- IEEE International Conference on Computer Communication and Networks, 2016, 2015
- IEEE Globecom, 2015
- IEEE Consumer Communications and Networking Conference, 2015

7. Selected Journal/Conference Reviewer

- a. ACM CCS, ICDCN, ICC, CNS, ICCCN, INFOCOM, LCN, WCNC, GlobeCom, Milcom, ICDCN, ICCCN
- b. IEEE Transactions Journals, such as, Transactions on Networking, Transactions on Parallel and Distributed Systems, Transactions on Wireless Communications, Transactions on Vehicular Technology. ACM Transactions on Simulation, IEEE Transactions on Cyber Physical systems, IEEE Transactions on

Industrial Informatics, IEEE Internet of Things Journal, IEEE Transactions on
Engineering Management