

CURRICULUM VITAE

Dongwan Shin, Ph.D.

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1 INTRODUCTION

1.1 Contact Information

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1.2 Career Objective

Ubiquity of computing has brought its security to the fore. Continuous and innovative approaches to providing a seamless experience and assurance of *secure computing* to users are strongly required. My career objective is to play a major role in this area by leading active research & development, training and education programs in computer and information system security.

1.3 Research Expertise

My main research interests are in the area of **computer security**, including system security, usable security, privacy, software security, and applied cryptography. Current and prior research projects that I have led or participated in have investigated a variety of important problems in authentication, access control, trust management, vulnerability analysis, insider threats, public key/privilege management infrastructure (PKI/PMI), cryptographic token-based security, secure web services, malware analysis, mobile security, sensor network security, and cloud security. My other research interests are in the area of software engineering, including requirement engineering, design patterns, and software testing.

1.4 Education

University of North Carolina at Charlotte, North Carolina, USA

- *Ph.D. in Information Technology*, College of Computing and Informatics, 12/2004
- *M.S. in Computer Science*, Department of Computer Science, 12/1999
- *Completion of B.S. Core Courses in Computer Science*, Department of Computer Science, 5/1998

1.5 Doctoral Dissertation

Title: Role-based Access Control for Trust Management: Model, Processes, and Management

Committee: Dr. Gail-Joon Ahn (Dissertation Advisor, currently at Arizona State University), Dr. Yuliang Zheng (currently chair of CS department at UAB), Dr. Bill Chu, and Dr. Cem Saydam

In this dissertation, I proposed a role-based trust model, called *TRUST_r*, for authorization in open and distributed computing environments. The notion of trust is integral to facilitate access control for parties in such environments. *TRUST_r* is supported by a policy framework called *ARIEL*, a role engineering (RE) framework called *SiREn*, and a role administration system called *RolePartner*. *ARIEL* allows us to express trust-based role association policies, *SiREn* to model system-centric information in order to facilitate RE processes, and *RolePartner* to build and configure *TRUST_r* components.

2 APPOINTMENTS

Primary Academic Positions

- Associate Professor, Dept. Computer Science and Engineering, NM Tech, 4/2010 - *present*
- Chair, Dept. Computer Science and Engineering, NM Tech, 7/2015 - 10/2018
- Orr Endowed Chair, Dept. Computer Science and Engineering, NM Tech, 6/2017 - 5/2018
- Assistant Professor, Dept. Computer Science and Engineering, NM Tech, 1/2005 - 3/2010

Other Academic/Industry Positions

- Founding Director, Secure Computing Laboratory, NM Tech, 9/2005 - *present*
- Faculty Researcher, Institute for Complex Additive Systems Analysis, NM Tech, 4/2012 - *present*
- Chief Technology Officer, SecureApps, LLC, 6/2012 - 6/2014
- Visting Researcher, Software Engineering Institute, Carnegie Mellon University, 8/2012 - 9/2013
- Consultant, CAaNES, LLC, 10/2011 - 1/2012
- Visiting Scholar, SEFCOM, Arizona State University, 8/2011

3 CAREER HIGHLIGHTS

3.1 Academia and Industry

- As chair of the CSE department, I led major efforts for the department growth in the areas of under/graduate student enrollment (**10% increase** in total since Spring 2016), faculty size (**1 new tenure-track, 1 new full-time instructor, and 2 new part-time instructors** hired since Fall 2015), curricular design (**new computer engineering minor program, new cybersecurity minor program, BS in IT program redesigned, new cybersecurity graduate certificate program, new MS in Science Teaching with CS concentration program, and enhanced MS and PhD in CS programs with new sets of requirements**), and faculty research (**substantial increase in new research/education grants** from government agencies and industry, increased number of **publications**, new collaborative research and education opportunities with peer institutions, and firm establishment of weekly departmental research seminars). I was named **Orr Endowed Chair** of the department for a period of June 2017 and May 2018.

- As assistant and tenured associate professor (since 2005), I have developed and taught highly popular courses on computer security (**Cryptography, Access Control & System Security, Usable Security, and Blockchain & Cryptocurrencies**), software design and programming (**Software Engineering and Web Programming**), and applications (**Cloud Computing**). As point of contact (PoC), I have also led major efforts for the department to receive the national center of academic excellence (CAE) in Information Assurance Education & Research (**CAE/IAE and CAE-R**) designations from DoD and DHS. On my research side, I have published over **70** high impact research papers on cybersecurity with my collaborators, mostly my former and current under/graduate students at Secure Computing Laboratory (<http://scl.cs.nmt.edu>) which I established in 2005. My research has been supported through grants from government agencies (**NSF, DoD, NSA**), national labs (**Sandia and Los Alamos**), and industry (**Intel, RiskSense, VirtualBridge**). Last but not least, I have actively participated in many professional activities: serving **program chairs of ACM SAC (2017-20)**, journal editors, various **leadership positions** on professional meetings, and technical program committee members for numerous cybersecurity and computer science conferences/symposia/workshops; and founding workshops on cybersecurity and cloud computing.

- As entrepreneur and consultant (2011-4), I was a co-founding member and **chief technology officer (CTO)** of **SecureApps LLC** in 2012, whose business focus was on mobile solution development & mobile security. The company was acquired by CAaNES (now RiskSense Inc) in 2014. I also worked as **consultant** to CAaNES in 2011, leading their gap analysis projects for web-based software systems of

the New Mexico Student Loan company, and as **visiting researcher** of CERT at CMU, working on a research project concerning insider threat analysis.

3.2 Media Coverage

- *NMSU receives major grant for NSF Scholarships in STEM program*, **EL PASO Herald-Post**, 2018
 - “The grant is for five years and success will be based on how many scholarship recipients have completed their computer-science degrees and are entering the workforce in a related field. ...
 - <https://bit.ly/2NFm6te>
- *Creating Cyber Protection Tools*, **Albuquerque Journal**, 2018
 - ... “Shin led a team of students to build new software that can immediately tell people whether a network is secure before logging on.”
 - <https://www.abqjournal.com/1125520/creating-cyber-protection-tools.html>
- *NMT Partners With ENMU-Ruidoso To Expand Computer Science Scholarship Program*, **ENMU Ruidoso News**, 2017
 - ... “SFS students have found jobs all over the nation in government agencies.”
 - <https://ruidoso.enmu.edu/index.php/new-page/289-enmu-ruidoso-cybersecurity-news>
- *The U.S. government’s \$1.6M investment in cybersecurity pays dividends for New Mexico*, **The Business Journals**, 2015
 - ... “Dongwan Shin, who is the chair of the computer science and engineering department, has a Ph.D and research focus that is in cybersecurity, and he works directly with students in the program.”
 - <https://bit.ly/2Q80pNv>
- *Tech Hosts Cybersecurity Program for Teachers*, **NMT News**, 2015
 - ... “The program, called GenCyber, will help teachers gain knowledge and skills in the cybersecurity field and design curricula to train the next generation cybersecurity workforce.”
 - <https://bit.ly/2QVNubg>
- *NM Tech Computer Science Program Receives Intel Equipment*, **NMT News**, 2006
 - ... “New Mexico Tech computer science professor Xiao Qin and his research partner Dongwan Shin recently received cutting-edge research and educational equipment from Intel.”
 - <http://w17.nmt.edu/news/all-news/93-2006/2874-20jan02g>

4 GRANTS

4.1 Research and Educational Grants at NM Tech: 2005 onwards

Since I joined the CSE Department at New Mexico Tech in 2005, I have secured as PI or co-PI research and educational grants from government agencies (*National Science Foundation, National Security Agency, and Department of Defense*), national labs (*Sandia National Labs and Los Alamos National Lab*), industry (*Intel, CAaNES, Virtual Bridge, and Google*). The total amount of grants is **\$6,329,018**. The topics of those funded projects cover system security (mobile, cloud, sensor, web, and smart grids), usable security, distributed trust management, security and privacy issues for e-business, applied cryptographic techniques, and security training & education. Below is the list of the funded projects with a brief description.

1. **Preparing Highly Qualified Students with Financial Need for Careers in Computing and Cyber-Security through Evidence-Based Educational Practices**

Sponsor: *NSF*, NMT PI (no co-PI), NMT Amount: **\$1,425,650**, Total Amount: \$3,969,365, 2018-23

- This S-STEM project is a collaboration between New Mexico State University and New Mexico Tech, in collaboration with five two-year colleges. This project aims to prepare low-income, academically high-achieving students to enter the computing workforce or graduate computing degree programs. To this end, my role at NMT will select 30 scholarship students and provide them with co-curricular activities, grounded in evidence-based pedagogical strategies, to strengthen technical and professional preparation.

2. **RII Track-1: The New Mexico SMART Grid Center: Sustainable, Modular, Adaptive, Resilient, and Transactive**

Sponsor: *NSF*, NMT co-PI (PI: Dr. Jun Zheng), NMT Amount: **\$2,055,120 (my share for student support is \$509,075, excluding travel, supply, and postdoc support)**, Total Amount: \$24,000,000, 2018-23

- This EPSCoR project will establish a SMART Grid Center to address the power, communication, and control needs of the electrical distribution network. The goal is to provide consumers the ability to decide how to generate, store, and manage energy on the existing electricity distribution infrastructure. My contribution to this project is to investigate the security and privacy issues of smart grids, with a goal of developing a new security and privacy architecture for distributed feeding microgrids.

3. **Research Experiences for Undergraduates - Emerging Issues in Cybersecurity**

Sponsor: *NSF*, \$287,984 - co-PI (PI: Dr. Jun Zheng), 2018-21

- This project establishes a new Research Experiences for Undergraduates (REU) Site at New Mexico Tech, which will host a diverse group of undergraduate students who will spend their summer working on research problems dealing with emerging areas of cybersecurity. PIs will collaborate with RiskSense, a cybersecurity company, to develop research projects that have real-world relevance and that can impact the practices of the cybersecurity industry. The site will provide mentoring and other professional development opportunities that should impact the future academic and professional careers of the students.

4. **Supplemental Award for Scholarship for Service: CyberCorps Cadre**

Sponsor: *NSF*, \$172,863 - co-PI (PI: Dr. Lorie Liebrock), 2017-19

- This SFS supplemental award enabled NMT to partner with the Eastern New Mexico University - Ruidoso campus for recruiting 2-year college students into the NMT SFS program.

5. **GenCyber: Extending Cybersecurity Education Opportunities for Secondary School Teachers in New Mexico**

Sponsor: *NSA & NSF*, \$99,971 - PI (co-PIs: Dr. Lorie Liebrock, Dr. Subhasish Mazumdar), 2015

- GenCyber at NMT was a summer training program that provided high-quality cybersecurity educational opportunities for secondary school teachers in the state of New Mexico. It consisted of a general introduction to cybersecurity and computer science, design of related curriculum, hands-on labs, latest cybersecurity issues and research results, and introduction to cybersecurity career opportunities in both government agencies and industry. Expected Outcomes were 1) promoting cybersecurity education for secondary school students in New Mexico through training secondary school teachers and assisting their cybersecurity curriculum development, 2) increasing opportunities for high-quality cybersecurity education for secondary school teachers in New Mexico, 3) enhancing the Master in Science Teaching (MST) in computer science focus area at New Mexico Tech through incorporating cybersecurity modules, and 4) increasing cybersecurity education opportunities for minority students.

6. **Scholarship for Service: CyberCorps Cadre**

Sponsor: *NSF*, \$1,633,336 - co-PI (PI: Dr. Lorie Liebrock), 2014-18

- This project sought to continue NMT participation in the CyberCorps: Scholarship for Service (SFS) program to prepare highly-qualified Cybersecurity professionals for entry into the government workforce. NMT is a Hispanic Serving Institution, designated as a Center of Academic Excellence in Information Assurance Education and Research by the National Security Agency, and meeting the criteria for multiple training standards (CNSS 4011, 4012, 4013E and 4016E.) To date, the program has graduated 47 CyberCorps SFS students including four Native Americans, three Hispanics, one Asian American, and nine women. This project will provide a multi-disciplinary, integrated education, research, and training to additional 13 CyberCorps SFS scholars. The project's objective is to prepare CyberCorps SFS scholars to become leaders in civil service, not merely practitioners, in the field of Cybersecurity.

7. **Security Analysis of Web Applications Vulnerability Scanners**

Sponsor: *CAaNES*, \$35,400 - PI (no co-PI), 2011-12

- This project was focused on enhancing the crawling capability of web security vulnerability scanners, aiming at a complete and efficient coverage of web resources within a site.

8. **Secure Data Services in Cloud Computing**

Sponsor: *Los Alamos National Laboratory*, \$8,500, 2010

9. **Establishing Virtual Desktop Infrastructure at SCL (Software & cash donation)**

Sponsor: *Virtual Bridges INC*, \$12,000 - PI (co-PI: Dr. Andrew Sung), 2010

- This project was to establish a cloud computing infrastructure called *EduCloud* for the purpose of research and education within the secure computing lab at the Computer Science and Engineering Department. *EduCloud* was composed of 24 servers running two infrastructure as a service (IaaS.), platforms: Eucalyptus and Verde

10. **Trustworthy Computing: User-controlled Persona in Virtual Community**

Sponsor: *National Science Foundation*, \$209,748 - PI (no co-PI), 2009-13

- This project was focused on addressing the problems of online privacy in virtual communities such as social networking sites (SNSs). We particularly aimed at solving the problem of "how users can control which attributes of theirs will be shared with other entities such as other users, 3rd-party applications, or service providers in virtual communities?" This problem, so-called selective attribute release and sharing, was partially addressed in the domain of digital identity management (permission-based attribute sharing, server-based approach) and in the domain of cryptography (selective attribute disclosure, credential-based approach). Our goal in this project was to develop fundamental techniques (both server- and credential-based) to attain user-controlled sharing of personal attributes in virtual community without compromising the users social intent and interaction.

11. **ENSL:Experimental Network of Sensors Lab for Advancing Research**

Sponsor: *National Science Foundation* (CRI), \$160,000 - co-PI (PI: Dr. Hamdy Soliman), 2007-11

- This project was focused on tackling the fundamental security problem in a wireless sensor network (WSN) and to explore a lightweight, risk-aware security framework for sensor network, which dynamically facilitates secure data/information/knowledge communication and sharing in WSN. The key idea behind this framework was that the notion of risk should be factored into the design of a security solution for WSN to better reflect the dynamic nature of the network as well as optimize the performance.

12. **ARIEL: An Advanced Security Policy Engineering Framework for Protecting Distributed and Critical Systems**

Sponsor: *Sandia National Laboratories*, \$40,000 - PI (no co-PI), 2007-8

- This project was focused on developing an advanced security policy engineering framework for protecting distributed, critical systems. The proposed framework was mainly concerned with the access control aspects of the security policy. It includes a formal approach to modeling an access control in distributed environments, which can be used to analyze flaws in authorization. Consequently, it results in an adversary model by detecting the flaws in distributed access control policies. In order to attain our goal, the proposed project includes three technical tasks: 1) modeling of a distributed access control policy, 2) analysis of access control policy constructs, and 3) development of access control policy management and enforcement.

13. R&D: Secure Infrastructure Management Systems

Sponsor: *Sandia National Laboratories*, \$9,000 - PI (no co-PI), 2007

- This project was focused on R&D for improving security in various infrastructure management systems components involving various administrative operations. Specifically it involved 1) exploring current and emerging techniques for secure data transfer and LDAP transaction monitoring, 2) developing software systems to enable automatic quota management for collaborative sharing needs and to facilitate secure data transfer of user account information between domains, and 3) conducting a detailed cryptanalysis of the techniques used in the solution, including the strength of the protection as well as potential attack scenarios.

14. DoD Information Assurance Scholarship Program: Capacity Building

Sponsor: *Department of Defense*, \$41,168 - co-PI (PI: Dr. Andrew Sung), 2006-7

- This project aimed to conduct investigation on the following inter-related topics: a) Automatic Identification and Data Collection (AIDC) Devices and Radio Frequency Identification Devices (RFIDs) as Malware Facilitators, b) Malware Technology: Similarity Analysis of Malicious Executables (SAME), and c) Dependable, Ubiquitous, Nomadic, and Embedded (DUNE) Computing.

15. DoD Information Assurance Scholarship Program: Capacity Building

Sponsor: *Department of Defense*, \$74,078 - co-PI (PI: Dr. Andrew Sung), 2005-6

- This project aimed to conduct research on selected IA topics (intrusion prevention; malware detection/software security; access control/security management). With already established expertise in these areas, the continued research will lead to refereed publications that contribute to the creation of knowledge about IA as a discipline, as well as project deliverables that meet DoD needs.

16. Building a Secure State-of-the-Art Embedded Real-Time Systems Laboratory at NMT

Sponsor: *Intel Corporation*, \$62,000 - co-PI (PI: Dr. Xiao Qin), 2005-6

- This project was focused on academic advances and promotion of research in the realm of embedded systems and their security. Specifically, this project enabled the development of new courses on embedded systems and their security as well as the establishment of the lab, whereby students will be able to learn and have hand-on experience on how to design and develop innovative Intel based systems for future embedded applications in a secure manner.

4.2 Pending Grant Proposals

1. Renewal of the Scholarship of Service Program at New Mexico Tech

Sponsor: *NSF*, \$1,739,846, PI, submitted on 7/31/2019

1. DUE-IUSE - Exploration & Design: Engaged Student Learning

Sponsor: *NSF*, \$100,000, PI, submitted on 5/9/2019

4.3 Prior Years: 2000 - 2004

The following list describes various funded projects that I actively participated in as a *Research Assistant* at the University of North Carolina at Charlotte.

1. **Collaborative Research: Secure Information Sharing in Internet-based Collaborative Applications**

Sponsor: *National Science Foundation (NSF)*, Summer 2003 - December 2004

- This research project was focused on the issue of information sharing between collaborating entities in a secure manner ensuring information assurance (IA) requirements and business continuity, preserving entities' privacy preferences, and incorporating new security constraints/policies raised by emerging technologies. My role in this project was to investigate on how to inject a role-based trust model into collaborative environments.

2. **Privacy Attribute Management**

Sponsor: *Bank of America*, Fall 2003 - December 2004

- This research was focused on the privacy issue in users' attribute sharing within federated identity management (FIM) models in general, and *Liberty Alliance* in specific. The objective was to provide a framework for preserving users' privacy while allowing their attributes to be securely shared in the *Liberty Alliance* model.

3. **Engineering Role-based Infrastructure Management System**

Sponsor: *Electronics and Telecommunications Research Institute*, Summer 2002 - Spring 2003

- This research project aimed to develop a system to assist security policy administrators in performing role engineering and administration to establish a role-based infrastructure. The system enables security administrators to build and configure various components of a RBAC model so as to embody organizational access control policies which can be separated from different enforcement mechanisms.

4. **Access and Identity Management**

Sponsor: *Bank of America*, Fall 2002 - Summer 2003

- This research project examined and analyzed existing network identity management models such as the *Liberty* model and the *Passport* model. Also, the objective included: (1) enable consumers to protect the privacy and security of their network identity information, (2) enable businesses to maintain and manage their customer relationships without third-party participants, (3) create a network identity infrastructure that supports all current and emerging network access devices.

5. **Email Fraud Protection for Financial Services**

Sponsor: *Bank of America*, Summer 2002

- This project addressed a protection mechanism for email and web fraud attack. The objective was to investigate potential risks in those popular online interaction channels between consumers and organizations, to identify critical vulnerabilities for email/web spoofing attacks.

6. **Role-based Access Control on Privilege Management Infrastructure**

Sponsor: *Electronics and Telecommunications Research Institute*, Summer 2001 - Spring 2002

- This research investigated, customized RBAC models to meet the needs for privilege management infrastructure (PMI), designed security architectures for role-based systems on the PMI environment, and demonstrated the feasibility of the security architectures through the prototype implementation. Core APIs, RBAC API and attribute certificate API, were developed in order to facilitate organizations to build secure PMI systems.

7. Scalable Token-based Authentication: Architecture and Mechanisms

Sponsor: *National Science Foundation (NSF)*, Fall 2001

- The objective of this project was to propose a novel framework to provide a systematic approach to understanding token-based authentication and to develop scalable token-based authentication architectures and mechanisms through the practical experimentation using commercial-off-the-shelf technologies. The authentication service is primarily based on the digital signature that public key cryptosystem provides, and supports multiple cryptographic function-enabled tokens such as *iButton* and *iKey*.

5 PUBLICATIONS

5.1 Journal and Book Chapter

*: supervised graduate student, +: supervised undergraduate student

1. Manoj Cherukuri*, Srinivas Mukkamala, and **Dongwan Shin**. “Detection of Shellcodes in Drive-by Attacks using Kernel Machines,” *Journal of Computer Virology and Hacking Techniques*, Springer, 10(3), 2014.
2. **Dongwan Shin** and Huiping Yao*. “A User Study of Security Warnings for Detecting QR Code Based Attacks on Android Phone,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, 4(4), 2013.
3. **Dongwan Shin**, Rodrigo Lopes*, and Seok-Woo Jang. “An Efficient Scheme for User-controlled Attribute Sharing in Federated Identity,” *Smart Computing Review*, KAIS, 2012.
4. William Claycomb*, **Dongwan Shin**, and Gail-Joon Ahn. “Enhancing Directory Virtualization to Detect Insider Activity,” *Security and Communication Networks*, Wiley, 5(8), 2012.
5. **Dongwan Shin**, Hakan Akkan*, and William Claycomb*. “Towards Role-based Provisioning and Access Control for Infrastructure as a Service (IaaS),” *Journal of Internet Services and Applications*, Springer, 2(3), 2011.
6. William Claycomb* and **Dongwan Shin**. “Extending Formal Analysis of Mobile Device Authentication Applications,” *Journal of Internet Services and Information Security*, 1(1), 2011.
7. William Claycomb* and **Dongwan Shin**. “A Novel Node Level Security Policy Framework for Wireless Sensor Networks,” *Journal of Network and Computer Applications*, Elsevier, 34(1), 2010.
8. **Dongwan Shin**, William Claycomb*, and Seunghyun Im. “A Visual Way to Talk to Strangers: Authentication in Wireless Pervasive Computing,” *International Journal of Ad Hoc and Ubiquitous Computing*, InderScience, 5(4), 2010.
9. William Claycomb* and **Dongwan Shin**. “A User Controlled Approach for Securing Sensitive Information in Directory Services,” *Journal of Universal Computer Science*, 15(15), 2009.
10. **Dongwan Shin** and Gail-Joon Ahn. “Role-based Privilege and Trust Management,” *Computer Science, Systems and Engineering Journal*, CRL Publishing, 20(6), 2005.
11. **Dongwan Shin**, Gail-Joon Ahn, Sangrae Cho, and Seunghun Jin. “A Role-based Infrastructure Management System: Design and Implementation,” *Concurrency and Computation: Practice and Experience*, 16(11), John Wiley & Sons, August 2004.
12. **Dongwan Shin**, Gail-Joon Ahn, and Sangrae Cho. “Role-based EAM Using X.509 Attribute Certificate,” A book chapter in *Research Directions in Data and Applications Security*, Ehad Gudes and Sujeet Shenoj (eds.), Kluwer Academic Publishers, 2003.

5.2 Conference, Symposium, and Workshop

13. Isaiah Liljestrand+, Marcelo Gonzales+, and **Dongwan Shin**. “Developing a Mental Model for use in the Context of Computer Security,” In the Proceedings of 34th ACM Symposium on Applied Computing, Limassol, Cyprus, April 8-12, 2019.
14. **Dongwan Shin** and Jiangfeng Sun*. “An Empirical Study of SSL Usage in Android Apps,” In Proceedings of 52nd IEEE International Carnahan Conference on Security Technology (ICCST 2018), Montreal, Canada, October 22-25, 2018.
15. Suranya Jayan*, Jiangfeng Sun*, and **Dongwan Shin**. “An Efficient Approach to Securing User Data in Android,” In Proceedings of IEEE International Conference on ICT Convergence (ICTC 2017), Jeju, South Korea, October 18-20, 2017.
16. Taegyu Hwang, Kisu Kim, Jeonghwan Lee, Jiman Hong, and **Dongwan Shin**. “Virtual Machine Scheduling based on Task Characteristic,” In Proceedings of 31st ACM Symposium on Applied Computing (SAC16), Pisa, Italy, April 4-8, 2016.
17. Daniel Fairweather+, Henry Mozer, Sterling Rinehart, and **Dongwan Shin**. “An Enhanced Approach to Preventing the SSLstripping Attack,” In *Proceedings of IEEE International Conference on ICT Convergence (ICTC 2015)*, Jeju, South Korea, October 28-30, 2015.
18. Cristobal Gallegos* and **Dongwan Shin**. “A Novel Device for Secure Home E-Voting,” In *Proceedings of ACM Research in Adaptive and Convergent Systems (ACM RACS 2015)*, Prague, Czech Republic, October 9-12, 2015.
19. Manoj Cherukuri*, Srinivas Mukkamala, and **Dongwan Shin**. “Detection of Plugin Misuse Drive-By Download Attacks using Kernel Machines,” In *Proceedings of the 9th International Workshop on Trusted Collaboration (TrustCol’14 - in conjunction with CollaborateCom 14)*, Miami, FL, October 22, 2014.
20. **Dongwan Shin** and Huiping Yao*. “A User Study of Security Warnings for Detecting QR Code Based Attacks on Android Phone,” In *Proceedings of the 5th International Workshop on Managing Insider Security Threats (MIST 2013)*, Pusan, South Korea, October 24-25, 2013.
21. Ying Wang* and **Dongwan Shin**. “Towards Multi-policy Support for IaaS Clouds to Secure Data Sharing,” In *Proceedings of the 9th IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom 2013)*, Austin, Texas, October 20-23, 2013.
22. Huiping Yao* and **Dongwan Shin**. “An Empirical Study of Security Warnings to Prevent QR Code Based Attacks on Android Phone,” In *Proceedings of the 8th ACM Symposium on Information, Computer and Communications Security (AsiaCCS 13)*, Hangzhou, China, May 7-10, 2013.
23. **Dongwan Shin**, Huiping Yao*, and Une Rosi*. “Supporting Visual Security Cues for WebView-based Android Apps,” In *Proceedings of the 28th ACM Symposium on Applied Computing (SAC 13)*, Coimbra, Portugal, March 18-22, 2013.
24. Manoj Cherukuri*, Srinivas Mukkamala, and **Dongwan Shin**. “Similarity Analysis of Shellcodes in Drive-by Download Attack Kits,” In *Proceedings of the 7th International Workshop on Trusted Collaboration (TrustCol’12 - in conjunction with CollaborateCom 12)*, Pittsburgh, PA, October 14, 2012.
25. **Dongwan Shin**, Ying Wang*, and William Claycomb*. “A Policy-based Decentralized Authorization Management Framework for Cloud Computing,” In *Proceedings of the 27th ACM Symposium on Applied Computing (SAC 12)*, Riva del Garda, Italy, March 26-30, 2012.

26. **Dongwan Shin** and Rodrigo Lopes*. “An Empirical Study of Visual Security Cues to Prevent the SSLstripping Attack,” In *Proceedings of the 27th Annual Computer Security Applications Conference (ACSAC 11)*, Orlando, Florida, December 5-9, 2011.
27. William Claycomb* and **Dongwan Shin**. “Formal Analysis of Device Authentication Applications in Ubiquitous Computing,” In *Proceedings of the 26th ACM Symposium on Applied Computing (SAC 11)*, TaiChung, Taiwan, March 21-24, 2011.
28. **Dongwan Shin** and Hakan Akkan*. “Domain-based Virtualized Resource Management in Cloud Computing,” In *Proceedings of 5th International Workshop on Trusted Collaboration (TrustCol 10 - in conjunction with CollaborateCom 10)*, Chicago, October 9, 2010.
29. William Claycomb* and **Dongwan Shin**. “Detecting Insider Activity Using Enhanced Directory Virtualization,” In *Proceedings of the ACM Workshop on Insider Threat (held in conjunction with ACM CCS 2010)*, Chicago, IL, October 7, 2010
30. Victor Echeverria*, Lorie M. Liebrock, and **Dongwan Shin**. “Permission Management System: Permission as a Service in Cloud Computing,” In *Proceedings of the 1st IEEE International Workshop on Emerging Applications for Cloud Computing (CloudApp 10 - in conjunction with Compsac 10)*, Seoul, South Korea, July 19-23, 2010.
31. William Claycomb* and **Dongwan Shin**. “Towards Secure Virtual Directories: A Risk Analysis Framework,” In *Proceedings of the 34th IEEE International Computer Software and Applications Conference (Compsac 10)*, Seoul, South Korea, July 19-23, 2010.
32. William Claycomb*, Rodrigo Lopes*, **Dongwan Shin**, and Byunggi Kim. “Group-based Security Policy in Wireless Sensor Networks,” In *Proceedings of the 25th ACM Symposium on Applied Computing (SAC 10)*, Sierre, Switzerland, March 22-26, 2010.
33. William Claycomb* and **Dongwan Shin**. “A Framework for Risk Analysis in Virtual Directory Security,” In *Proceedings of the 25th ACM Symposium on Applied Computing (SAC 10)*, Sierre, Switzerland, March 22-26, 2010.
34. Rodrigo Lopes*, Hakan Akkan*, William Claycomb*, and **Dongwan Shin**. “An OpenSocial Extension for Enabling User-controlled Persona in Online Social Networks,” In *Proceedings of 4th International Workshop on Trusted Collaboration (TrustCol 09 - in conjunction with CollaborateCom 09)*, Washington DC, November 11, 2009.
35. William Claycomb* and **Dongwan Shin**. “Threat Modeling for Virtual Directory Services,” In *Proceedings of the 43rd IEEE International Carnahan Conference on Security Technology*, Zurich, Switzerland, October 5-8, 2009.
36. William Claycomb* and **Dongwan Shin**. “Secure Device Pairing Using Audio,” In *Proceedings of the 43rd IEEE International Carnahan Conference on Security Technology*, Zurich, Switzerland, October 5-8, 2009.
37. William Claycomb*, Rodrigo Lopes*, **Dongwan Shin**, and Byunggi Kim. “Key Establishment using Group Information for Wireless Sensor Networks,” In *Proceedings of the 1st International Conference on Sensor Systems and Software (S-Cube 09)*, Pisa, Italy, September 9-8, 2009.
38. **Dongwan Shin**, Rodrigo Lopes*, and Gail-Joon Ahn. “A Framework for Enabling User-controlled Persona in Online Social Networks,” In *Proceedings of the 33rd IEEE International Computer Software and Applications Conference (Compsac 09)*, Seattle, Washington, July 20-24, 2009.
39. William Claycomb* and **Dongwan Shin**. “An Enhanced Approach to Using Virtual Directories for Protecting Sensitive Information,” In *Proceedings of the 7th International Workshop on Security in Information Systems (WOSIS 09)*, Milan, Italy, May 5-10, 2009.

40. **Dongwan Shin**, Rodrigo Lopes*, and William Claycomb*. “Authenticated Dictionary-based Attribute Sharing in Federated Identity Management,” In *Proceedings of the 6th International Conference on Information Technology: New Generation (ITNG 09)*, Las Vegas, Nevada, April 27-29, 2009.
41. **Dongwan Shin** and Rodrigo Lopes*. “Enabling Interoperable and Selective Data Sharing among Social Networks Sites,” In *Proceedings of the 3rd International Workshop on Trusted Collaboration (TrustCol 08 - in conjunction with CollaborateCom 08)*, Orlando, Florida, November 13-16, 2008.
42. William Claycomb* and **Dongwan Shin**. “Protecting Sensitive Information in Directory Service using Virtual Directories,” In *Proceedings of the 4th International Conference on Collaborative Computing (CollaborateCom 08)*, Orlando, Florida, November 13-16, 2008.
43. Rodrigo Lopes* and **Dongwan Shin**. “Controlled Sharing of Identity Attributes for Better Privacy,” In *Proceedings of the 2nd International Workshop on Trusted Collaboration (TrustCol 07 - in conjunction with CollaborateCom 07)*, White Plains, USA, November 12-15, 2007.
44. William Claycomb* and **Dongwan Shin**. “Enabling Delegation for Impromptu Collaboration in Pervasive Computing,” In *Proceedings of the 22nd IEEE International Symposium on Computer and Information Sciences (ISCIS 07)*, Ankara, Turkey, November 7-9, 2007.
45. William Claycomb*, **Dongwan Shin**, and Della Hareland. “Towards Privacy in Enterprise Directory Services: A User-centric Approach to Attribute Management,” In *Proceedings of the 41st IEEE International Carnahan Conference on Security Technology*, Ottawa, Ontario, Canada, October 8-11, 2007.
46. William Claycomb* and **Dongwan Shin**. “Towards Secure Resource Sharing for Impromptu Collaboration in Pervasive Computing,” In *Proceedings of the 22nd ACM Symposium on Applied Computing (SAC 07)*, Seoul, South Korea, March 11-15, 2007.
47. William Claycomb* and **Dongwan Shin**. “A Visual Framework for Securing Impromptu Collaboration in Pervasive Computing,” In *Proceedings of the International Workshop on Trusted Collaboration (TrustCol 06 - in conjunction with CollaborateCom 06)*, Atlanta, USA, November 17-21, 2006.
48. William Claycomb* and **Dongwan Shin**. “Using A Two Dimensional Colorized Barcode Solution for Authentication in Pervasive Computing,” In *Proceedings of the IEEE International Conference of Pervasive Services (ICPS 06)*, Lyon, France, June 26-29, 2006.
49. **Dongwan Shin**. “Modeling Role-Based Trust and Authority in Open Environments,” In *Proceedings of the International Conference on Security and Management (SAM 06)*, Las Vegas, NV, June 26-29, 2006.
50. William Claycomb* and **Dongwan Shin**. “Secure Real World Interaction using Mobile Devices,” In *Proceedings of Pervasive Mobile Interaction Devices (Permid 06 - in conjunction with Pervasive 06)*, *Lecture Notes in Computer Science (LNCS)*, Dublin, Ireland, May 7, 2006.
51. William Claycomb* and **Dongwan Shin**. “Enabling Mobility in Enterprise Security Management,” In *Proceedings of IEEE Workshop on Information Assurance (WIA 06 - in conjunction with IEEE IPCCC 06)*, Phoenix, Arizona, April 10-12, 2006.
52. William Claycomb* and **Dongwan Shin**. “Mobile-driven Architecture for Managing Enterprise Security Policies,” In *Proceedings of 44th ACM Southeast Conference (ACMSE 06)*, Melbourne, FL, March 10-12, 2006.
53. **Dongwan Shin**. “Securing Spontaneous Communications in Wireless Pervasive Computing Environments,” In *Proceedings of IEEE International Symposium on Multimedia (ISM 05)*, Irvine, CA, December 12-14, 2005.

54. Gail-Joon Ahn, **Dongwan Shin**, and Prasad Shenoy. "Information Assurance in Federated Identity Management: Experimentations and Issues," In *Proceedings of International Conference on Web Information Systems Engineering (WISE 04), Lecture Notes in Computer Science*, Brisbane, Australia, November 22-24, 2004.
55. **Dongwan Shin** and Gail-Joon Ahn. "Role-based Trust Assignment in Trust Management Systems," In *Proceedings of the 17th International Conference on Parallel and Distributed Computing Systems (PDCS 04)*, San Francisco, USA, September 15-17, 2004.
56. Gail-Joon Ahn, **Dongwan Shin**, and Longhua Zhang. "Role-based Privilege Management Using Attribute Certificates and Delegation," In *Proceedings of International Conference on Trust and Privacy in Digital Business (TrustBus 04), Lecture Notes in Computer Science*, Zaragoza, Spain, August 30 - September 3, 2004.
57. **Dongwan Shin**, Gail-Joon Ahn, and Prasad Shenoy. "Ensuring Information Assurance in Federated Identity Management," In *Proceedings of the 23rd IEEE International Performance Computing and Communications Conference (IPCCC 04)*, Phoenix, Arizona, April 14-17, 2004.
58. Prasad Shenoy, **Dongwan Shin**, and Gail-Joon Ahn. "Towards Security-Aware Web Services for Federated Identity Management," In *Proceedings of the IASTED International Conference on Communication, Network, and Information Security (CNIS 03)*, New York City, December 10-12, 2003.
59. Gail-Joon Ahn, Longhua Zhang, **Dongwan Shin**, and Bill Chu. "Authorization Management for Role-based Collaboration," In *Proceedings of IEEE International Conference on System, Man and Cybernetic (SMC 03)*, Washington, D.C., October 5-8, 2003.
60. **Dongwan Shin**, Gail-Joon Ahn, Sangrae Cho, and Seunghun Jin. "On Modeling System-centric Information for Role Engineering," In *Proceedings of 8th ACM Symposium on Access Control Models and Technologies (SACMAT 03)*, Villa Gallia, Como, Italy, June 2-3, 2003.
61. **Dongwan Shin**, Gail-Joon Ahn, Sangrae Cho, and Seunghun Jin. "A Role Administration System in Role-based Authorization Infrastructures - Design and Implementation," In *Proceedings of 18th ACM Symposium on Applied Computing (SAC 03) in Special Track on Computer Security (Best Paper Award)*, Melbourne, Florida, USA, March 9-12, 2003.
62. **Dongwan Shin**, Gail-Joon Ahn, and Joon S. Park. "An application of DSML for RBAC," In *Proceedings of 26th IEEE Annual International Computer Software and Application Conference (Compsac 02)*, Oxford, England, August 26-29, 2002.
63. **Dongwan Shin**, Gail-Joon Ahn, and Sangrae Cho. "Role-based EAM Using X.509 Attribute Certificate," In *Proceedings of 16th Annual IFIP WG 11.3 Working Conference on Data and Application Security (DBSec 02)*, King's College, University of Cambridge, UK, July 29-31, 2002.
64. Gail-Joon Ahn and **Dongwan Shin**. "Towards Scalable Authentication in Health Services," In *Proceedings of 7th IEEE International Workshop on Enterprise Security (WETICE 02)*, CMU, PA, June 10-12, 2002.

5.3 Poster, Work-in-progress, and Demo

65. Daniel Fairweather+ and **Dongwan Shin**. "Demo: A Chrome Extension to Prevent the SSLstripping Attack," In *Symposium on Usable Privacy and Security (SOUPS 12)*, Washington DC, July 11-13, 2012.
66. Rodrigo Lopes and* **Dongwan Shin**. "Preventing SSLstripping Attack using Visual Security Cues," In *Symposium on Usable Privacy and Security (SOUPS 11)*, Poster Abstract, Pittsburgh, PA, July 20-22, 2011.

67. William Claycomb* and **Dongwan Shin**. “Designing and Implementing Access Control for Impromptu Collaboration,” In *Annual Computer Security Application Conference (ACSAC 06)*, Works-in-Progress, Miami Beach, Florida, December 11-15, 2006.

5.4 Tutorial

68. **Dongwan Shin** and William Claycomb. “From Security Fundamentals to Advanced Access Control of Cloud Computing,” In *26th ACM Symposium on Applied Computing (SAC 2011)*, TaiChung, Taiwan, March 21, 2011.
69. **Dongwan Shin**, William Claycomb, and Vincent Urias. “Cloud Computing Security,” In *17th ACM Conference on Computer and Communications Security (CCS 2010)*, Chicago, Illinois, October 7, 2010.

5.5 Miscellaneous Technical Publications

70. Rodrigo Lopes and **Dongwan Shin**. “Towards Secure Infrastructure Management System Development,” Technical Report, SIS-Fall-07-01, New Mexico Tech, September 2007. Also submitted to Sandia National Laboratories.
71. Prasad Shenoy, Badrinath Mohan, Uttam Sankhala, **Dongwan Shin**, and Gail-Joon Ahn. “Comparative Study of Microsoft .NET Passport and Liberty Alliance,” Technical Report, LIISP-Fall-03-01, UNC Charlotte, August 2003. Also submitted to Bank of America (copyrighted material).
72. **Dongwan Shin** and Gail-Joon Ahn. “Engineering Role-based Infrastructure Management System,” Technical Report, LIISP-Spring-03-01, UNC Charlotte, May 2003. Also submitted to Electronics and Telecommunications Research Institute (ETRI).
73. **Dongwan Shin**, Gail-Joon Ahn, and Zhaoyu Liu. “On Email Spoofing and Web Spoofing,” Technical Report, LIISP-Summer-02-01, UNC Charlotte, July 2002. Also submitted to Bank of America.
74. **Dongwan Shin**, Gail-Joon Ahn, and Sangrae Cho. “Role-based Access Control on Privilege Management Infrastructure,” Technical Report, LIISP-Spring-02-01, UNC Charlotte, May 2002. Also submitted to Electronics and Telecommunications Research Institute (ETRI).

6 PROFESSIONAL ACTIVITIES

6.1 Journal Editorship

- Review Board
 - *Journal of Internet Services and Information Security*, since 2011
 - *Journal of Intelligent and Information Systems*, 2016-2017
 - *International Journal of Secure Software Engineering*, 2009-2016
- Guest Editors
 - *TDSC*, IEEE, *Guest Editor, Special issue on Security and Privacy in Mobile Platforms*, 2013
 - *COSE*, Elsevier, *Guest Editor, Special issue on Trusted Collaboration*, 2013
 - *JNCA*, Elsevier, *Guest Editor, Advanced Technologies for Homeland Defense & Security*, 2013
 - *JOWUA*, *Guest Editor, Special issue on Insider Threats and Information Leakage*, 2011

6.2 Conference Leadership and Committee Service

- Organizing Committee
 - *Program Chair*, ACM Symposium on Applied Computing (SAC 2017-20)
 - *Publicity Chair*, ACM Conference on Computer and Communications Security (CCS 2014-15)
 - *Publication Chair*, ACM Symposium on Applied Computing (SAC 2009-15)
 - *Track co-Chair*, ACM SAC Special Track on Smart Grid and Smart Technology (SAC 2013-16)
 - *Web Chair*, ACM Symposium on Access Control Models & Technologies (SACMAT 2011-20)
 - *Publicity Chair*, ACM Symposium on Access Control Models & Technologies (SACMAT 2010)
 - *Workshop co-Chair*, International Workshop on Practical Issues on Security in Public Internet Services (PISPIS-2018)
 - *Workshop co-Chair*, International Workshop on Trusted Collaboration (TrustCol 2009-13)
 - *Workshop co-Chair*, IEEE International Workshop on Emerging Applications for Cloud Computing (CloudApp 2010)
- Select Program Committee for Select Conferences and Workshops
 - ACM Symposium on Information, Computer and Communications Security (ASIACCS 2014)
 - ACM Symposium on Access Control Models and Technologies (SACMAT 2006-16)
 - International Conference on Utility and Cloud Computing (UCC 2010-13)
 - IEEE Signature Conference on Computers, Software, and Applications (COMPSAC 2012-15)
 - IEEE International Conference on Information Reuse and Integration (IRI 2014)
 - IEEE Globecom: Ad Hoc, Sensor, and Mesh Networking Symposium (AHSN 2011-13)
 - International Conference on Cloud and Green Computing (CGC 2011-13)
 - Colloquium for Information Systems Security Education (CISSE 2011-12)
 - Workshop on Privacy, Security, and Trust in Mobile and Wireless Systems (MobiPST 2011-18)
 - IEEE International Performance Computing & Communications Conference (IPCCC 2012-8)
 - International Conference on Ubiquitous and Future Networks (ICUFN 2017-18)
 - Workshop on Managing Insider Security Threats (MIST 2011-15)
 - International Conference on Computer Communications and Networks (ICCCN 11)
 - International Conference on Advanced Communications and Computation (Infocomp 11)
 - IEEE International Symposium on Service-Oriented System Engineering (SOSE 11)
 - IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC 09)
 - International World Wide Web Conference - Security and Privacy Track (WWW 09)
 - IFIP WG 11.3 Working Conference on Data and Applications Security (DBSec 2007-09)
 - International workshop on Software Engineering for Secure Systems (SESS 2008-09)
 - 7th ACIS International Conference on Software Engineering Research, Management and Applications (SERA 2009)
 - IEEE International Workshop on Trusted Collaboration (TrustCol 2006-09)
 - IEEE International Workshop on Information Assurance (WIA 2007)

6.3 Proposal Reviewer

- National Science Foundation
 - *Review Panel - 2009 (twice), 2011, 2012, 2013, 2015, 2018, 2019*
- Nebraska Research Initiative
 - *Mail Reviewer (2012)*

6.4 Journal and Book Reviewer

- Reviewer for Select Journals and Books
 - ACM Transactions on Information and System Security
 - IEEE Transactions on Knowledge and Data Engineering
 - IEEE Transactions on Parallel and Distributed Systems
 - IEEE Transactions on Dependable and Secure Computing
 - IEEE Transactions on Services Computing
 - IEEE Transactions on Software Engineering
 - IEEE Internet Computing
 - Springer Journal of Intelligent Information Systems
 - International Journal of Distributed Sensor Networks
 - Journal of Communications and Networks
 - Information Sciences
 - Elsevier Computer Standards and Interfaces
 - Elsevier Computer and Security
 - Security and Communication Networks
 - Future Generation Computer Systems
 - Journal of Wireless Mobile, Ubiquitous Computing, and Dependable Applications
 - IET Journal of Information Security
 - International Journal of Secure Software Engineering
 - International Journal of Computers and Applications
 - Cryptography and Network Security (Chapter 13-16), Prentice Hall,
 - EURASIP Journal on Information Security
 - Handbook of Technology Management (Wiley)
 - Exploring Cryptography (tentative title, Chapter 5) (Cengage)
 - Information and Software Technology
 - Network Security (Chapter 2), 1st edition, McGraw-Hill
 - Handbook of Computer Network (Wiley)
 - Journal of Supercomputing
 - Journal of Automatic and Trusted Computing
 - Data and Knowledge Engineering

6.5 Invited Talks, Lectures, and Presentations

- How to Develop Usable Security Solutions, Samsung Seoul R&D Campus, Seoul, South Korea, 12/21/2018
- How to Develop Usable Security Solutions, Soongsil University, Seoul, South Korea, 12/20/2018
- International Study and Collaboration at NMT, Soonchunhyang University, Asan, South Korea, 10/28/2013
- Preventing MITM Attacks using Visual Security Augmentation (VISAGE), Soongsil University, South Korea, 10/29/2013
- Preventing MITM Attacks using Visual Security Augmentation (VISAGE), University of Bridgeport, Bridgeport, CT, 2/23/2012
- An Empirical Study of Visual Security Cues to Prevent the SSLstripping Attack, 12th Technical Symposium of Korean Computer Scientists and Engineers Association in America, San Jose, 12/18/2011
- A Policy-based Decentralized Authorization Management Framework for Cloud Computing, Montclair State University, Montclair, NJ, 5/5/2011
- Cloud Computing Security: From Fundamentals to Advanced Access Control, Gyeongsang National University, Jinju, South Korea, 3/17/2011
- U-Control: User-controlled Privacy Management in Social Networks, Soongsil University, Seoul, South Korea, 7/19/2010
- U-Control: User-controlled Privacy Management in Social Networks, University of New Mexico CS Colloquium, 5/5/2009
- ARIEL: Advanced Security Policy Engineering Framework for Distributed and Critical Systems, Sandia National Labs, Albuquerque, New Mexico, 2/29/2008
- Panel Moderator at Information Technology Forum at NMT, Socorro, New Mexico Tech, 05/2005.
- Access Control and Trust Management, *Army Research Lab-New Mexico Tech Symposium* at White Sand Missile Range (WSMR), 04/2005.
- A Role-based Infrastructure Management System, *Electronics and Telecommunications Research Institute (ETRI)*, South Korea, 05/2003.
- Remote NT System Intrusion and Its Countermeasures, *ACM Student Chapter* at UNC Charlotte, 12/2000.

6.6 Departmental Services

- As Chair, since July 2015
 - Represented the department in regular meetings of the Council of Chairs, Engineering Council, and Graduate Council; and wrote various regularly scheduled reports such as the departmental activity report (DAR)
 - Faculty and instructor hiring:
 - * Recruited a seasoned part-time instructor, Dr. Blaine Burham, to teach senior and graduate level cybersecurity courses: *CSE 589: Foundations of Information Security* and *CSE589: Red/Blue Cybersecurity Exploration*

- * Recruited a full-time instructor, Dr. Rita Kuo, to teach the CSE lower division courses: *CSE/IT101: Introduction to CS and IT* and *CSE/IT107: Introduction to Programming with Python*
- * Recruited a full-time instructor and women in computer science (WiCS) program coordinator, Amy Knowles, to teach freshman and sophomore level courses and lead an effort to recruit, retain, and advise female students in CS/IT programs. The WiCS program is supported by endowed money from CSE alumni
- Teaching coordination for faculty: arranged a course schedule for each semester and assigned teaching assistants and tutors
- Led efforts to revamp CSE graduate program: MS in CS, MS in CS with IT degree program revision with new graduate course development; PhD in CS degree program revision with new sets of requirements
- Met high school students who were interested in CSE/IT; gave talks introducing the department and interacted with prospective undergraduate students and their parents during a number of pre-arranged visits organized by Admissions; also helped arranging career development sessions for students interested in summer internships and post-graduation jobs
- Planned, monitored, and made decision on the department budget
- Led an effort to host the CSE Speaker Series event on Fridays during semester. Researchers and practitioners from both inside and outside New Mexico Tech have been invited to give a talk on their research and their jobs. Speakers from Sandia, LANL, NMT, UNM, NMSU, ASU, UTSA, and Intel were invited.
- Led an effort to revise the BS in Information Technology program in the following way:
 - * Minimum credit hours required changed from 130 to 120
 - * Two management courses added as required: IT462 (Systems, Risk and Decision Analysis) and IT466 (Project Management)
 - * IT311 (Human Information Processing and Decision Making) is replaced by IT 330 (Management and Organizational Behavior) as required
- As CAE Contact Point
 - Prepared and submitted the CAE Annual Reports since 2016.
 - Led an effort to prepare and submit an application for NM Tech to be re-designated as a national Center of Academic Excellence in Information Assurance Research (CAE-R) in 2014 and 2019.
 - Co-led efforts to prepare for NM Tech CSE Department’s application for re-accreditation for ABET in 2013.
 - Led efforts to prepare for NM Tech CSE Department’s application for a Center of Academic Excellence in Information Assurance **Research (CAE-R)** sponsored by National Security Agency (NSA) and Department of Defense (DoD). NM Tech has been a CAE-IAE (**Education**) since 2002. Application was submitted on 1/15/2009. Certified on 6/1/2009 (till 2014).
- As CSE Faculty and ACM Chapter Advisor
 - Served as faculty advisor for an NM Tech cyber hacking team that competed at Southwest Regional Collegiate Cyber Defense Competition (CCDC) in 2013.
 - Have been serving as faculty advisor for ACM Student Chapter at NM Tech since 2012. Main activities hosted by NM Tech ACM Chapter were **Capture The Flag (CFT, cyber hacking competition)** for New Mexico college students and regional **International Collegiate Programming Competition (ICPC, ACM programming competition)** for **Rocky Mountain Regional** in 2012.

- Led efforts (course development and mapping) to prepare for NM Tech CS Department’s application for national information assurance (IA) certification programs (**CNSS 4013**: System Administrators, **CNSS 4016**: Audit Analysts) managed by National Security Agency (NSA).
 - * **CNSS 4013**: application submitted on 1/15/2007 and certified on 6/5/2007 (till 2012)
 - *Primary courses mapped*: Access Control and System Security, Cryptography
 - * **CNSS 4016**: application submitted on 1/15/2008 and certified on 6/4/2008 (till 2013)
 - *Primary courses mapped*: Secure Software Construction
- Participated in NM Tech CS Department’s efforts to get its program ABET-accredited. Application was submitted in 2007 summer. Accredited in 2007.

7 TEACHING ACTIVITIES

7.1 University Teaching at New Mexico Tech

- **Spring 2019¹**
 - CSE/IT189: Cybersecurity, LLC* (1-credit freshman class, 20 CS/IT students)
 - CSE/IT326: Software Engineering (undergraduate class, 45 CS/IT students)
 - CSE589, CSE/IT489: Blockchain and Cryptocurrencies* (graduate/senior class, 14 students)
- **Fall 2018**
 - CSE/IT441, CSE589: Cryptography and Applications (graduate/senior class, 13 CS/IT students)
 - CSE391: Pre SFS Professional Development (undergraduate class, 10 CS/IT students)
- **Spring 2018**
 - CSE/IT326: Software Engineering (undergraduate class, 35 CS/IT students)
- **Fall 2017**
 - CSE/IT441, CSE589: Cryptography and Applications (graduate/senior class, 14 CS/IT students)
- **Spring 2017**
 - CSE/IT326: Software Engineering (undergraduate class, 45 CS/IT students)
- **Fall 2016**
 - CSE/IT441, CSE589: Cryptography and Applications (graduate/senior class, 18 CS/IT students)
- **Spring 2016**
 - CSE/IT326: Software Engineering (undergraduate class, 28 CS/IT students)
- **Fall 2015**
 - CSE/IT489, CSE589: Usable Security (graduate/senior class, 9 CS/IT students)
 - IT/CSE321: Internet and Web Programming (undergraduate class, 11 CS/IT students)
- **Summer 2015**
 - ST589: GenCyber* (graduate class, 10 students, co-developed by Drs. Liebrock and Mazumdar as part of NSA/NSF sponsored project)
- **Spring 2015**
 - CSE/IT326: Software Engineering (undergraduate class, 26 CS/IT students)
 - CSE/IT213: Object oriented Programming (undergraduate class, 26 CS/IT students)
- **Fall 2014**
 - CSE/IT441, CSE589: Cryptography and Applications (graduate/senior class, 13 CS/IT students)
 - IT/CSE321: Internet and Web Programming (undergraduate class, 14 CS/IT students)

¹New course development (*) and existing course enhancement (+)

- **Spring 2014**
 - CSE/IT489, CSE589: Usable Security* (graduate/senior class, 11 CS/IT students)
 - CS326/IT326: Software Engineering (undergraduate class, 22 CS/IT students)
- **Fall 2013**
 - CS389/IT263: Information Protection and Security+ (undergraduate class, 12 CS students)
 - IT321/CS389: Internet and Web Programming (undergraduate class, 20 CS/IT students)
- **Spring 2013**
 - CS589/489: Cloud Computing and Applications (graduate/senior class, 6 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 27 CS/IT students)
- **Fall 2012**
 - CS589/CS441/IT441: Cryptography and Applications (graduate/senior class, 16 CS students)
 - IT321/CS389: Internet and Web Programming (undergraduate class, 16 CS/IT students)
- **Spring 2012**
 - CS589/489: Access Control and System Security (graduate/senior class, 16 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 18 CS/IT students)
- **Spring 2011**
 - CS589: Cloud Computing and Application (graduate/senior class, 11 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 22 CS/IT students)
- **Fall 2010**
 - CS589/CS441/IT441: Cryptography and Applications (graduate/senior class, 12 CS students)
 - IT321/CS389: Internet and Web Programming (undergraduate class, 18 CS/IT students)
- **Spring 2010**
 - CS589: Access Control and System Security (co-instruct with Dr. Fu, 10 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 28 CS/IT students)
- **Fall 2009**
 - CS589: Virtualization Technologies* (co-instruct with Dr. Fu, 11 CS students)
 - CS389/IT321: Internet and Web Programming (undergraduate class, 16 CS/IT students)
- **Spring 2009**
 - CS589: Cloud Computing and Application* (graduate class, 11 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 28 CS/IT students)
- **Fall 2008**
 - CS589/CS441/IT441: Cryptography and Application (graduate/senior class, 18 CS/IT students)
 - CS328/IT328: Secure Software Construction (undergraduate class, 17 CS/IT students)
- **Spring 2008**
 - CS589: Access Control and System Security (graduate class, 10 CS students)
 - CS326/IT326: Software Engineering (undergraduate class, 31 CS/IT students)
- **Fall 2007**
 - CS589/CS441/IT441: Cryptography and Application (graduate/senior class, 16 CS/IT students)
 - CS328/IT328: Secure Software Construction+ (undergraduate class, 23 CS/IT students)
- **Spring 2007**
 - CS589: Advanced Computer Security* (graduate class, 10 CS students)
 - CS326/IT326: Software Engineering* (undergraduate class, 31 CS/IT students)
- **Fall 2006**
 - CS589/CS441/IT441: Cryptography and Application (graduate/senior class, 21 CS/IT students)
 - IT321/CS391: Internet and Web Programming* (undergraduate class, 18 CS/IT students)

- **Spring 2006**
 - CS589: Access Control and System Security* (graduate class, 9 CS students)
 - CS222: Systems Programming (undergraduate class, 30 CS/IT students)
- **Fall 2005**
 - CS441/IT441: Cryptography and Applications⁺ (undergraduate class, 44 CS/IT students)
- **Spring 2005**
 - CS391/IT222: Internet Programming (undergraduate class, 17 CS/IT students)

7.2 Student Research Advising at New Mexico Tech

- **Doctoral Students - (2 graduated)**
 - Manoj Cherukuri (graduated in 12/2014, Senior Associate with Stroz Friedberg)
 - * Dissertation title: *Stepping up against Watering Hole Attacks: Analysis and Detection of Drive-by Download Attacks*
 - William R. Claycomb (graduated in 12/2009, Technical Lead at CERT & Adjunct faculty-CMU)
 - * Dissertation title: *Authenticated Key Establishment in Wireless and Mobile Computing*
- **Master Students - (11 graduated and 4 in progress)**
 - Raisa Islam (since Fall 2019)
 - Jacob Marks (since Summer 2019)
 - Ratna Halder (since Spring 2018)
 - Md Umar Sharif (since Fall 2017)
 - Dipanjan Das Roy (since Fall 2017)
 - Jiangfeng Sun (graduated in 5/2018, Software Developer at ICBC in China)
 - * Independent Study title: *An Empirical Study of SSL Usage in Android Apps*
 - Cristobal Gallegos (graduated in 5/2016, Software Developer at Sandia Labs)
 - * Independent Study title: *A Novel Device for Secure Home e-Voting*
 - Suranya Jayan (graduated in 5/2016, Software Developer at Citibank)
 - * Thesis title: *An Efficient Approach to Securing User Data in Android*
 - Huiping Yao (graduated in 12/2013, Software Developer at Microsoft)
 - * Thesis title: *An Empirical Study of Security Warnings to Prevent QR Code Based Attacks on Android Phone*
 - Ying Wang (graduate in 12/2013, Software Developer at HP)
 - * Independent Study title: *Towards Multi-policy Support for IaaS Clouds to Secure Data Sharing*
 - Cedric Snoy (graduated in 5/2013, Software Developer at Sandia Labs)
 - * Independent Study title: *CrawlMark: A Benchmark for Web-Crawlers*
 - Une T. Rosi (graduated in 5/2012, Software Developer at Epic Inc)
 - * Independent Study title: *Using Visual Security Cues to Prevent SSL-stripping Attack in WebView based Android Applications*

- Hakan Akkan (graduated in 12/2009, Software Developer at Amazon)
 - * Independent Study title: *Design and Implementation of Web Component for CRONUS Calculators*
- Rodrigo Lopes (graduated in 5/2008, Software Developer at Amazon)
 - * Thesis title: *Selective Disclosure of Identity Attributes for Better Privacy*
- William R. Claycomb (graduated in 12/2005, Doctoral program at NM Tech)
 - * Thesis title: *Authentication in Wireless Pervasive Computing using 2-D Colorized Barcode Recognition*
- **Bachelor Students - (3 graduated)**
 - Jiwan Chong (undergraduate research assistant since Summer 2019)
 - Isaiah Liljestrand (undergraduate research assistant since Summer 2018, Senior)
 - Christopher Fontes-Barry (undergraduate research assistant since Fall 2018, Senior)
 - Daniel Fairweather (graduated in Fall 2013, Software Developer at Microsoft)
- **Doctoral Students whose committee I have served on**
 - **Current:** Anand Paturi, Max Plank, Dongyi Chen
 - **Graduated:** Yang Wang (2018), Earl Eiland (2017), Kesav Kancharla (2015), Ram Basnet (2011), Mengyu Qiao (2011), Danny Quist (2010), Majed Abusafiya (2008), Mohammed Alghamdi (2008), Gopalakrishna R Tadiparthi (2008), Anthonius Sulaiman (2007), Qingzhong Liu (2007), Srinivas Mukkamala (2005)
- **Master Students whose committee I have served on**
 - **Current:**
 - **Graduated:** Thomas Watson, John McCloud, Rachel Tucker, Jennifer Monica Marie Lente, Omar Hamdy Soliman, John Joseph Franks, Kyle John McCready, Chen Sun, James Wernicke, Ian Burns, Jennifer Max, Jitendra Tummala, Hugh Wimberly, Marion Wilde, Nico Marrero, Derek Smith, Mengyu Qiao, Sherry Thomas, Aaron Torres, James Curry, Hari Paruchuri, Direndra Jayakumar, Moses Schwartz, Mayuri Shakamuri, Ronald Prine, David Burton, Paul Ferrell, Piyush Srivastava, Unnati Thakore, Tanya Montoya, Sayi J. Yendrapalli, Carl Thomsen, Kiranmai Bellam, Heather Bitsoi, Jianhua Zhou, Karthikeyan Ramamoorthy

8 PROFESSIONAL CERTIFICATES/MEMBERSHIPS

- ACM, ACM SIGSAC, ACM SIGAPP
- IEEE, IEEE Computer Society

9 HONORS AND AWARDS

- Distinguished Service Award, ACM Special Interest Group on Applied Computing (SIGAPP, 2016)
 - This award is given to SIGAPP members who provided outstanding service to the Annual Symposium on Applied Computing (SAC), which is a flagship conference of SIGAPP. Recipients of this award have held different positions in the SAC Organizing Committee over the years.
- Outstanding Service Award, ACM Symposium on Applied Computing (ACM SAC, 2017-18)
 - This award is given to the conference program chair, which I served for 2 years (from 2017 till 2018).

- Service Recognition Awards, ACM Symposium on Applied Computing (ACM SAC, 2009-15)
 - This award is given to the conference publication chair, which I served for 7 years (from 2009 till 2015).
- Best Poster Award, ACM Research in Adaptive and Convergent Systems Conference (2015)
- Best Paper Award, Computer Security Track at 18th ACM Symposium on Applied Computing Conference (2003)
- Academic-Year Ambassadorial Scholarship (\$21,000), Rotary International (1996 - 97).
- Merit-based Scholarship (Best Entrance Exam Category): full tuition waiver & stipend (monthly ₩ 620,000 × 4 yrs.), Hongik University (1988-90, 1993-95).

10 REFERENCES

Available upon request.