

## CURRICULUM VITAE

# Dr. Meera Sridhar

## Associate Professor

Department of Software and Information Systems

University of North Carolina Charlotte

**Office:** Woodward Hall, 305-B  
9201 University City Blvd, Charlotte, NC 28223  
**Voice:** (704) 687-1844  
**Fax:** (704) 687-1652  
**Email:** [msridhar@uncc.edu](mailto:msridhar@uncc.edu)

## 1 Education

- PhD The University of Texas at Dallas, Computer Science, August 2014  
Dissertation Title: *Model-checking In-lined Reference Monitors*  
Dissertation Research Area: Language-based Security & Formal Methods  
Advisor: Kevin W. Hamlen
- MS Carnegie Mellon University, Computer Science, August 2004  
MS Thesis Title: *Experiments and Analysis Using an Attack Graph Toolkit*  
Advisor: Jeannette M. Wing
- BS Carnegie Mellon University, Computer Science, December 2002  
University and College Honors  
Minor in Mathematical Science  
Undergraduate Thesis Title: *Formal Verification of Safety Critical Devices*  
Advisors: Jeannette M. Wing and Edmund M. Clarke

## 2 Professional Experience

- Jul 2021—Present Associate Professor with Tenure, Dept. of Software and Information Systems  
University of North Carolina Charlotte, Charlotte, NC
- Aug 2014—Jun 2021 Assistant Professor, Dept. of Software and Information Systems  
University of North Carolina Charlotte, Charlotte, NC
- Aug 2007—Aug 2014 Teaching and Research Assistant, Dept. of Computer Science  
The University of Texas at Dallas, Richardson, TX

Jun 2012—Dec 2012 Customer Service Applications, Kindle, Intern  
Lab126, Cupertino, CA

Jun 2008—Aug 2008 Advanced Technologies Lab, Research Intern  
Adobe Systems, Inc., San Jose, CA

### 3 Career Highlights

- Received more than \$2.7 million in funding since appointment at UNC Charlotte, including an NSF CISE Research Initiation Initiative (CRII) award as sole-PI (\$209,985) in 2016, an NSF SaTC EDU award as lead-PI (\$512,101) in 2020, and a UNC System Research Opportunities Initiative award as lead-PI (\$1.5 million) in 2023.
- Founder and Director of the Center for Energy Security And Reliability (CESAR), a multi-million dollar collaborative project, funded by the North Carolina General Assembly, between UNC Charlotte, NC State University and NCA&T University on building security and reliability for the power grid against cyberattacks. The interdisciplinary center brings together experts in power systems, high-performance computing, cybersecurity, AI and more.
- Designed and currently Director of the CCI IoT SmartHome Lab, a cutting-edge, *external facing* IoT lab that provides state-of-the-art devices, software, hardware, office equipment and library to faculty and students for facilitating research, education and outreach in related topics.
- Successfully graduated 3 PhD students, 2 MS thesis students, mentored more than 30 MS, more than 30 UG, and 6 NSF REU (4 co-supervisions) students on various research projects.
- Established mobile and IoT security, language-based security, and formal methods as core parts of the SIS software security curriculum. Actively involved in establishing inclusive, engaging pedagogy for advanced cybersecurity curricula, with research in this field funded by the National Science Foundation and the UNC Charlotte Faculty Research Grant, the Scholarship of Teaching and Learning Grant, and the Gambrell Faculty Fellow award.

## 4 Publications

### 4.1 Peer Reviewed Journal Publications

- [J8] Harini Ramaprasad, **Meera Sridhar**, and Erik Akeyson. Interactive Program Visualization to Teach Stack Smashing: An Experience Report. *Journal of the Colloquium for Information Systems Security Education (CISSE)*, (10):1, March 2023. <https://cisse.info/journal/index.php/cisse/article/view/164>
- [J7] Erik Akeyson, Harini Ramaprasad and **Meera Sridhar**. DISSAV: A Dynamic, Interactive Stack-Smashing Attack Visualization Tool. *Journal of the Colloquium for Information Systems Security Education (CISSE)*, (9):1, March 2022. *Best Paper Award*.  
<http://cisse.info/journal/index.php/cisse/article/view/141>
- [J6] Islam Obaidat, **Meera Sridhar**, Khue M. Pham and Phu H. Phung. Jadeite: A Novel Image-Behavior-based Approach for Java Malware Detection using Deep Learning. *Elsevier Computers & Security*, (113): 102547, November 2021.  
<https://www.sciencedirect.com/science/article/pii/S0167404821003710?dgcid=author>
- [J5] Fadi Yilmaz, **Meera Sridhar**, Abhinav Mohanty, Vasant Tendulkar, and Kevin W. Hamlen. A Fine-Grained Classification and Security Analysis of Web-based Virtual Machine Vulnerabilities. *Elsevier Computers & Security*, (105): 102246, June 2021.  
<https://www.sciencedirect.com/science/article/pii/S0167404821000705>
- [J4] Phu H. Phung, Rakesh S.V. Reddy, Steven Cap, Anthony Pierce, Abhinav Mohanty, and **Meera Sridhar**. HybridGuard: A Multi-Party, Fine-Grained Permission and Policy Enforcement Framework for Hybrid Mobile Applications. *Journal of Computer Security*, 28(3): 375-404, April 2020.  
<https://content.iospress.com/articles/journal-of-computer-security/jcs191350>
- [J3] **Meera Sridhar**, Mounica Chirva, Benjamin Ferrell, Kevin W. Hamlen, and Dhiraj V. Karamchandani. Flash in the Dark: Illuminating the Landscape of ActionScript Web Security Trends and Threats. *Journal of Information System Security (JISSec)*, 13(2): 59—95. Dec 2017.  
<http://www.jissec.org/Contents/V13/N2/V13N2-Sridhar.html>
- [J2] Phu H. Phung, Maliheh Monshizadeh, **Meera Sridhar**, Kevin W. Hamlen, and V.N. Venkatakrishnan. Between Worlds: Securing Mixed JavaScript/ActionScript Multi-party Web Content. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 12(4):443—457. July-Aug 2015. [impact factor: 2.296, Scimago Journal and Country Rank h-index: 44]  
[http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6894186&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs\\_all.jsp%3Farnumber%3D6894186](http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6894186&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D6894186)
- [J1] **Meera Sridhar**, Richard Wartell and Kevin W. Hamlen. Hippocratic Binary Instrumentation: First Do No Harm. *Science of Computer Programming (SCP), Special Issue on Invariant Generation*, 93(B):110—124, November 2014. [impact

factor: 0.828, Scimago Journal and Country Rank h-index: 51]

<http://www.sciencedirect.com/science/article/pii/S0167642314000914>

## 4.2 Peer Reviewed Conference Publications

- [C19] Islam Obaidat, Zachary Palko, and **Meera Sridhar**. From DDoSim to DDoSimQ: Enhancing DDoS Attack Simulations Through Full System Emulation. Proceedings of the *5<sup>th</sup> Workshop on CPS and IoT Security (CPSIoTSec)*, Nov 2023.
- [C18] Islam Obaidat, Bennett Kahn, Fatemeh Hosseinabadi, and **Meera Sridhar**. Practical Experience: Creating a Large-scale Memory Error IoT Botnet Using NS3DockerEmulator. Proceedings of the *53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, June 2023.
- [C17] John Grady Hall, Abhinav Mohanty, Pooja Murarisetty, Ngoc Diep Nguyen, Julio César Bahamón, Harini Ramaprasad and **Meera Sridhar**. Criminal Investigations: An Interactive Experience to Improve Student Engagement and Achievement in Cybersecurity courses. In Proceedings of the *53<sup>rd</sup> ACM Technical Symposium on Computer Science Education (SIGCSE)*, March 2022.
- [C16] Yates Snyder, Yaw Frempong, **Meera Sridhar**, Erfan Al-Hossami, and Samira Shaikh. HIJaX: Human Intent JavaScript XSS Generator. In the *18<sup>th</sup> International Conference on Security and Cryptography (SECRYPT)*, July 2021.
- [C15] Abhinav Mohanty and **Meera Sridhar**. HybriDiagnostics: Evaluating Security Issues in Hybrid SmartHome Companion Apps. In the *IEEE Workshop on Internet of Safe Things (SafeThings)*, May 2021.
- [C14] Fadi Yilmaz, **Meera Sridhar**, and Wontae Choi. Experimental Analysis & Refinement of a Guided Exploit Generation Technique for Language Virtual Machines. Accepted for publication in the *Workshop on Learning from Authoritative Security Experiment Results (LASER)*, December 2020.
- [C13] Islam Obaidat and **Meera Sridhar**. Mitigating Large-Scale Memory Exploits in IoT Devices using Software Diversity. Work in Progress presented at the *Annual Computer Security Applications Conference (ACSAC)*, Dec 2020.
- [C12] Fadi Yilmaz, **Meera Sridhar**, and Wontae Choi. Guide Me to Exploit: Assisted ROP Exploit Generation for ActionScript Virtual Machine. In Proceedings of the *36<sup>th</sup> Annual Computer Security Applications Conference (ACSAC)*, Dec 2020.
- [C11] Fadi Yilmaz and **Meera Sridhar**. A Survey of In-lined Reference Monitors: Applications and Challenges. In *Proceedings of the 16th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)*, Nov 2019.  
<https://ieeexplore.ieee.org/document/9035367>

- [C10] Kelly V. English, Islam Obaidat, and **Meera Sridhar**. Practical Experience Report: Exploiting Memory Corruption Vulnerabilities in Connman for IoT Devices. In *Proceedings of the 49th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, June 2019.  
<https://ieeexplore.ieee.org/abstract/document/8809506>
- [C9] **Meera Sridhar**, Abhinav Mohanty, Fadi Yilmaz, Vasant Tendulkar, and Kevin W. Hamlen. Inscription: Thwarting ActionScript Web Attacks from Within. In *Proceedings of the 17th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)*, July 2018.  
<https://ieeexplore.ieee.org/document/8455946>
- [C8] Abhinav Mohanty, Islam Obaidat, Fadi Yilmaz and **Meera Sridhar**. Control hijacking Vulnerabilities in IoT Firmware: A Brief Survey. In *the IEEE International Workshop on Security and Privacy for the Internet-of-Things (IoTSec)*, April 2018.
- [C7] Phu H. Phung, Abhinav Mohanty, Rahul Rachapalli, and **Meera Sridhar**. HybridGuard: A Principal-based Permission and Fine-Grained Policy Enforcement Framework for Web-based Mobile Applications. In *the IEEE Workshop on Mobile Security Technologies (MoST)*, May 2017.  
<https://ieeexplore.ieee.org/document/8227301>
- [C6] **Meera Sridhar**, Abhinav Mohanty, Vasant Tendulkar, Fadi Yilmaz, and Kevin W. Hamlen. In a Flash: An In-lined Reference Monitoring Approach to Flash App Security. In *the 12<sup>th</sup> IEEE Workshop on Foundations of Computer Security (FCS)*, June 2016.
- [C5] Kevin W. Hamlen, Micah M. Jones, and **Meera Sridhar**. Aspect-oriented Runtime Monitor Certification. In *Proceedings of the 18th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, pp. 126—140, March-April 2012.  
[http://link.springer.com/chapter/10.1007%2F978-3-642-28756-5\\_10](http://link.springer.com/chapter/10.1007%2F978-3-642-28756-5_10)
- [C4] **Meera Sridhar** and Kevin W. Hamlen. Flexible In-lined Reference Monitor Certification: Challenges and Future Directions. In *Proceedings of the 5th ACM SIGPLAN Workshop on Programming Languages meets Program Verification (PLPV)*, pp. 55—60, January 2011.  
<http://dl.acm.org/citation.cfm?id=1929537>
- [C3] **Meera Sridhar** and Kevin W. Hamlen. ActionScript In-lined Reference Monitoring in Prolog. In *Proceedings of the 12th International Symposium on Practical Aspects of Declarative Languages (PADL)*, pp. 149—151, January 2010.  
[http://link.springer.com/chapter/10.1007/978-3-642-11503-5\\_13](http://link.springer.com/chapter/10.1007/978-3-642-11503-5_13)

- [C2] **Meera Sridhar** and Kevin W. Hamlen. Model-Checking In-Lined Reference Monitors. In *Proceedings of the 11th International Conference on Verification, Model Checking, & Abstract Interpretation (VMCAI)*, pp. 312—327, January 2010.  
[http://link.springer.com/chapter/10.1007%2F978-3-642-11319-2\\_23](http://link.springer.com/chapter/10.1007%2F978-3-642-11319-2_23)
- [C1] Brian W. DeVries, Gopal Gupta, Kevin W. Hamlen, Scott Moore, and **Meera Sridhar**. ActionScript Bytecode Verification With Co-Logic Programming. In *Proceedings of the 4th ACM SIGPLAN Workshop on Programming Languages and Analysis for Security (PLAS)*, pp. 9—15, June 2009.  
<http://dl.acm.org/citation.cfm?id=1554342>

### 4.3 Peer Reviewed Posters

- [P10] Shaikh Islam, Chenglong Fu, **Meera Sridhar**. Enhancing Physical-based CPS Anomaly Detection Using Large Language Models. Poster presented at the *Annual Computer Security Applications Conference (ACSAC)*, Dec 2023.  
<https://www.acsac.org/2023/files/web/acsac23-poster10.pdf>
- [P9] Abhinav Mohanty, Pooja Murarisetty, Ngoc Diep Nguyen, Julio Bahamon, Harini Ramaprasad, and **Meera Sridhar**. Criminal Investigations: An Interactive Experience to Improve Student Engagement and Achievement in Cybersecurity courses. Poster presented at the *52nd ACM Technical Symposium on Computer Science Education (SIGCSE'21)*, March 2021.
- [P8] Fadi Yilmaz, **Meera Sridhar**, and Wontae Choi. Guide Me to Exploit: Assisted ROP Exploit Generation for ActionScript Virtual Machine. Poster presented at the *Annual Computer Security Applications Conference (ACSAC)*, Dec 2020.  
[https://www.openconf.org/acsac2020/modules/request.php?module=oc\\_program&action=page.php&id=27](https://www.openconf.org/acsac2020/modules/request.php?module=oc_program&action=page.php&id=27)
- [P7] Abhinav Mohanty and **Meera Sridhar**. Security Evaluation of SmartHome Companion Web-based Mobile Apps. Poster presented at the *Annual Computer Security Applications Conference (ACSAC)*, Dec 2020.  
[https://www.openconf.org/acsac2020/modules/request.php?module=oc\\_program&action=page.php&id=27](https://www.openconf.org/acsac2020/modules/request.php?module=oc_program&action=page.php&id=27)
- [P6] Yaw Frempong, Yates Snyder, Erfan Al-Hossami, **Meera Sridhar**, and Samira Shaikh. HIJaX: Human Intent JavaScript XSS Generator. Poster presented at the *Annual Computer Security Applications Conference (ACSAC)*, Dec 2020.  
[https://www.openconf.org/acsac2020/modules/request.php?module=oc\\_program&action=page.php&id=27](https://www.openconf.org/acsac2020/modules/request.php?module=oc_program&action=page.php&id=27)
- [P5] Abhinav Mohanty, Parag Mhatre, and **Meera Sridhar**. Class-sourced Penetration Testing of IoT Devices. Poster presented at the *IEEE Workshop on the Internet of Safe Things (SafeThings)*, May 2020.  
<https://www.ieee-security.org/TC/SPW2020/SafeThings/>
- [P4] Alek Mieczkowski, Islam Obaidat, K. Virgil English, Glenn Um, Gavin Sroczynski and **Meera Sridhar**. Exploit Delivery to Consumer IoT Devices using WiFi

Pineapple. Poster presented at the *IEEE Workshop on the Internet of Safe Things (SafeThings)*, May 2019.

<https://www.ieee-security.org/TC/SPW2019/SafeThings/>

- [P3] Phu H. Phung, Abhinav Mohanty, Rahul Rachapalli, and **Meera Sridhar**. HybridGuard: A Principal-based Permission and Fine-Grained Policy Enforcement Framework for Web-based Mobile Applications. Poster presented at the *Network and Distributed System Security Symposium (NDSS)*, February 2018.  
<https://www.ndss-symposium.org/ndss2018/posters/>
- [P2] Mounica Chirva, **Meera Sridhar**, Vasant Tendulkar, Phu H. Phung, and Mark G. Pleszkoch. Functional eXtraction for Precise Java Malware Detection. Poster presented at the *9th International Symposium on Research in Attacks, Intrusions and Defenses (RAID)*, September 2016.  
<http://www.raid2016.org/list-of-accepted-posters/>
- [P1] Phu H. Phung, Maliheh Monshizadeh, **Meera Sridhar**, Kevin W. Hamlen, and V.N. Venkatakrishnan. FlashJaX: A Framework for Securing Mixed JavaScript/ActionScript Multi-party Web Content. Poster presented at the *USENIX Security Symposium*, August 2016.  
<https://www.usenix.org/conference/usenixsecurity16/poster-session>

#### 4.4 Peer-reviewed Classroom Activities

- [A1] POGIL Activity Clearinghouse: Ramaprasad, H., Sridhar, M., & Snyder, Y. (2021). Activity 1: Introduction to C. *POGIL Activity Clearinghouse*, 2(3).

#### 4.5 Other Publications

- [T5] Islam Obaidat, **Meera Sridhar**, Fatemeh Tavakoli. Daedalus: Defense Against Firmware ROP Exploits Using Stochastic Software Diversity. *Arxiv e-print*. 2024.  
<https://doi.org/10.48550/arXiv.2401.16234>
- [T4] **Meera Sridhar**, Abhinav Mohanty, Vasant Tendulkar, Fadi Yilmaz, and Kevin W. Hamlen. Inscription: Thwarting ActionScript Web Attacks From Within. Technical Report SIS-UNCC-17-01, Department of Software and Information Systems, University of North Carolina at Charlotte, March 2017.  
<http://cyberdna.uncc.edu/techreports/sridhar-sis-uncc-17-01.pdf>
- [T3] **Meera Sridhar**, Mounica Chirva, Benjamin Ferrell, Kevin W. Hamlen, and Dhiraj V. Karamchandani. Flash in the Dark: Illuminating the Landscape of ActionScript Web Security Trends and Threats. Technical Report SIS-UNCC-16-01, Department of Software and Information Systems, University of North Carolina Charlotte, Charlotte, North Carolina, May 2016.  
<http://cyberdna.uncc.edu/techreports/sridhar-uncc-16-01.pdf>
- [T2] **Meera Sridhar**, Richard Wartell, and Kevin W. Hamlen. Hippocratic Binary Instrumentation: First Do No Harm (Extended Version). Technical Report UTDCS-03-13, Computer Science Department, The University of Texas at

Dallas, Richardson, Texas, February 2013.

<http://webpages.uncc.edu/msridhar/sridhar-utdcs-03-13.pdf>

[T1] Kevin W. Hamlen, Micah M. Jones, and **Meera Sridhar**. Chekov: Aspect-oriented Runtime Monitor Certification via Model-checking (Extended Version). Technical Report UTDCS-16-11, Computer Science Department, The University of Texas at Dallas, Richardson, Texas, May 2011.

<http://webpages.uncc.edu/msridhar/hamlen-utdcs-16-11.pdf>

## 5 Extramural Funding

### 5.1 Peer Reviewed National and International Grants

- **Meera Sridhar** (Lead PI), Badrul Chowdhury (co-PI), Robert Cox (co-PI), Chenglong Fu (co-PI), Michael Mazzola (co-PI), William Tolone (co-PI), Weichao Wang (co-PI), NC Research Capacity Building for a Secure & Reliable Power Grid 2050. UNC System Research Opportunities Initiative. July 1, 2023—June 30, 2026, \$1,500,000. (UNC Charlotte portion: \$750,000).
- Heather Lipford (Lead PI), **Meera Sridhar** (co-PI). NSF-CNS #2244424. REU Site: Smart and Secure Future Computing. March 1, 2023—February 28, 2026, \$350,685.
- **Meera Sridhar** (Lead PI), Harini Ramaprasad (Co-PI). NSF-DGE # 1947295. SaTC:EDU: Enhancing Security Education in Hybrid Mobile and Internet of Things Firmware through Inclusive, Engaging, Learning Modules (E-SHIELD). January 1, 2020—December 31, 2022, \$512,101 (including supplements).
- **Meera Sridhar** (Sole PI). NSF-CNS #1566321. SaTC: CRII: A Language-based Approach to Hybrid Mobile App Security. September 1, 2016—August 31, 2020, \$209,985.00.

### 5.2 Peer Reviewed Institutional Grants

- Harini Ramaprasad (Lead PI), **Meera Sridhar** (co-PI). Measuring Student Learning, Engagement, and Accessibility for Neurodivergent Students in Advanced Cybersecurity Topics. Scholarship of Teaching and Learning Grant, UNC Charlotte, Nov 30, 2023—May 30, 2023, \$10,000.
- Harini Ramaprasad (Lead PI), **Meera Sridhar** (co-PI). Engaged Pedagogy for Teaching Applied Formal Methods. Faculty Research Grant, UNC Charlotte, July 1, 2022—December 31, 2023, \$16,000.
- **Meera Sridhar** (Lead PI), Julio Cesar Bahamon (co-PI), Audrey Rorrer (co-PI). Digital Learning in the Covid Era: A Games-based Approach to Online Education for K-12. Gambrell Faculty Fellowship, UNC Charlotte, August 15, 2020—December 31, 2021, \$15,000.
- **Meera Sridhar** (Lead PI), Weichao Wang, (Senior Personnel), Tom Moyer (Senior Personnel), Linqun Bai (Senior Personnel), Badrul Chowdhury (Senior Personnel), Yaosuo Xue (Senior Personnel), Xiaohong Yuan (Senior Personnel), Chen Bo (Senior Personnel). Building Strong Teams for Photovoltaic Systems



and Power Grid Resilience and Security. Ignite Planning Grant, UNC Charlotte, April 1, 2020—March 31, 2022, \$69,404.

- **Meera Sridhar** (Lead PI), Samira Shaikh (co-PI). Generating Code from Natural Language to Detect and Prevent Cyber-Attacks. Faculty Research Grant, UNC Charlotte, January 1, 2020—May 31, 2021, \$16,000.
- **Meera Sridhar** (PI), Weichao Wang (co-PI), David Wilson (co-PI), Nicholas Davis (co-PI), Jinpeng Wei (co-PI). CCI SmartHome IoT Lab. CCI Faculty Innovation Fund. January 1, 2019—June 30<sup>th</sup>, 2019, \$24,700.

## 6 Student Supervision

### 6.1 Doctoral Students Supervised

- Fadi Yilmaz. Graduated Spring 2020.
- Abhinav Mohanty. Graduated Summer 2021.
- Islam Obaidat, Spring 2017—present. Ph.D. in progress.
- Shaikh Islam, Fall 2021—present, (co-supervised with Dr. Chenglong Fu). Graduated with MS.
- Danial Abshari, Fall 2023—present. Ph.D. in progress.

### 6.2 Master's Thesis Students Supervised

- Erik Akeyson, Graduated Spring 2022 (co-supervision with Dr. Harini Ramaprasad).
- Yaw Frempong, Graduated Summer 2022.

### 6.3 Master's Students Supervised

- Vinmay Nair. Research Assistant, Spring 2015.
- Rishikesh Walawalker. Research Assistant, Spring 2015.
- Mounica Chirva. Research Assistant and Individual Study, Spring 2016.
- Vasant Tendulkar, Research Assistant, Spring 2016.
- David Farthing, Research Assistant, Summer 1, 2016.
- Arun Ramakrishnan, Individual Study, Fall 2016.
- Rahul Rachapalli, Individual Study, Spring 2017; Research Assistant, Summer, Fall 2017.
- Kshitij Gorde, Research Assistant and Individual Study, Spring 2017.
- Shantanu Rajenimbalkar, Fall 2017.
- Archit Khullar, Research Assistant, Spring 2018.
- Karthick Selvaraj, Individual Study, Spring 2018.
- Ram Vinoth Ponnarasu, Research Assistant, Fall 2018, Spring 2019.
- Tabish Gulzar Maniar, Research Assistant, Fall 2018, Spring 2019.
- Arjun Kalidas, Research Assistant, Fall 2018, Spring 2019.
- Parag Mhatre, Research Assistant, Summer 2019, Individual Study, Fall 2019.
- Brian Bahtiarian, Individual Study, Fall 2019.
- Sagar Shah, Individual Study, Fall 2019.

- Amir Payandeh, Individual Study, Spring 2020.
- Hadi Nasrallah, Individual Study, Spring 2020.
- Habib Maizoumbou Dan Aouta, Individual Study, Spring 2020.
- Venkata Achanta, Individual Study, Summer 2021 (co-supervised with Dr. Julio Bahamon).
- Jahnvi Devabhaktuni, Individual Study, Fall 2021 (co-supervised with Dr. Harini Ramaprasad).
- Shalom Satwik Thathapudi, Individual Study, Fall 2021.
- Megha Menon, Research Assistant, Spring 2023 (co-supervised with Dr. Harini Ramaprasad)
- Ashish Devu, Research Assistant, Spring 2023
- Rahul Banerjee, Research Assistant, Spring 2024, Summer 2024 (co-supervised with Dr. Chenglong Fu)
- Varun Kumar Bejugam, Research Assistant, Spring 2024 (co-supervised with Dr. Harini Ramaprasad)
- Aniket Sunil Shendre, Research Assistant, Spring 2024 (co-supervised with Dr. Harini Ramaprasad)
- Sai Charan Muvva, Research Assistant, Spring 2024 (co-supervised with Mr. Rick Hudson)
- Sai Teja Reddy, Research Assistant, Spring 2024 (co-supervised with Mr. Rick Hudson)
- Sushma Indrani Dangeti, Research Assistant, Spring 2024 (co-supervised with Dr. Harini Ramaprasad)
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#### **6.4 Undergraduate Students Supervised**

- Glenn Um, Fall 2018
- Jacqueline White, Fall 2018
- Kelly English, Fall 2018, Spring 2019
- Alek Mieczkowski, Fall 2018 & Spring 2019
- Tanvi Patil, Fall 2018, Spring 2019, Fall 2019
- Zachary Taylor, Fall 2018 & Spring 2019
- John Watson, Spring 2019
- Gavin Sroczynski, Spring 2019
- Alex Poloniewicz, Fall 2019
- Cory Martin, Spring 2020
- Seth Schallau, Spring 2020
- Yates Snyder, Spring 2019, Spring 2020, Summer 2020
- Yaw Frempong, Spring 2020, Summer 2020
- Pooja Murarisetty, Summer 2020 (co-supervised with Drs. Harini Ramaprasad & Julio Bahamon)
- Diep Ngoc Nguyen, Summer 2020 (co-supervised with Drs. Harini Ramaprasad & Julio Bahamon)

- Venkata Achanta, Spring 2021 (co-supervised with Dr. Julio Bahamon)
- John Grady Hall, Summer 2021, Fall 2021, Spring 2022 (co-supervised with Drs. Harini Ramaprasad & Julio Bahamon)
- Shruti Rabara, Fall 2021, Spring 2022 (co-supervised with Drs. Harini Ramaprasad & Julio Bahamon)
- Sydney Carmer, Summer 2022 (co-supervised with Dr. Harini Ramaprasad)
- Ken Balint, Fall 2022
- Olivier Deschamps, Fall 2022, Spring 2023
- Daniel Gray, Spring 2023
- Lisa Dittrich, Spring 2023, Fall 2023 (co-supervised with Dr. Harini Ramaprasad)
- Huong Tran, Spring 2023 (co-supervised with Dr. Harini Ramaprasad)
- Kasper Holm, Spring 2023 (co-supervised with Dr. Harini Ramaprasad)
- Josh Needles, Fall 2023 (co-supervised with Dr. Harini Ramaprasad)
- Zach Palko, Fall 2023, Spring 2024
- Matthew de la Rosa, Fall 2023 (co-supervised with Dr. Cori Faklaris)
- Zoey Vail, Fall 2023, Spring 2024
- Christopher Rees, Spring 2024
- Saad Ahmed, Spring 2024
- Soham Pradhan, Spring 2024 (co-supervised with Dr. Harini Ramaprasad)
- Kausika Manivannan, Spring 2024 (co-supervised with Dr. Harini Ramaprasad)
- Shanta Cole, Spring 2024 (co-supervised with Dr. Chenglong Fu)

## **6.5 NSF Research Experience for Undergraduates (REU)**

### **Students Supervised**

- Kelly English, Summer 2019
- Yates Snyder, Summer 2020 (co-supervised with Dr. Harini Ramaprasad)
- Bennett Kahn, Summer 2021, Fall 2021, Spring 2022 (co-supervised with Dr. Harini Ramaprasad)
- Zachary Palko, Summer 2023
- Matthew de la Rosa, Summer 2023 (co-supervised with Dr. Cori Faklaris)
- Manuel Morales, Summer 2023 (co-supervised with Dr. Harini Ramaprasad)

# **7 Teaching**

## **7.1 Major Accomplishments**

- Created a new, fully-online course on Web-based Mobile App and IoT Firmware Security, with state-of-the-art learning materials and activities inspired by the latest research in the fields
- Restructured the introductory Security and Privacy courses (ITIS 3200/6200/8200) to integrate active learning across all security and privacy topics; built a repository of hands-on activities that can be used by all ITIS 3200/6200/8200 instructors

- Established language-based security and formal methods as core parts of the SIS software security curriculum through a Language-based Security research seminar and a fully restructured Software Assurance course (ITIS 6150/8150)
- Actively worked on designing these courses to fit the NSA/DHS National Center of Academic Excellence requirements, enabling them to be integrated into our new MS in Cyber Security and Graduate Certificate in Software Security programs
- Received the *2019-2020 SIS Faculty Development Teaching Award*, and attended the required Connected Learner Summer Institute on active-learning in Summer '19, and contributed to the ACE-IT! (Advancing Computing Education) program in Summer '20

## 7.2 Courses Taught

### 7.2.1 Undergraduate Courses

- ITIS 3200: Introduction to Information Security and Privacy
  - Completely restructured course
  - Terms: Spring 2017, Fall 2017, Spring 2018, Spring 2019, Fall 2019, Fall 2021 (2 Sections), Fall 2022 (2 Sections), Spring 2023, Fall 2023 (2 Sections), Spring 2024
  - Average Enrollment: 50

### 7.2.2 Graduate Courses

- ITIS 5331: Web-based Mobile and IoT Firmware Security
  - New course
  - Term: Spring 2020
  - Enrollment: 15
- ITIS 6010/8010: Topics in Software and Information Systems: Mobile/IoT Security Workshop
  - New course
  - Term: Spring 2018, Spring 2019
  - Average Enrollment: 11
- ITIS 6150/8150: Software Assurance
  - Completely restructured course
  - Terms: Spring 2016, Spring 2017
  - Average Enrollment: 8
- ITIS 6200/8200: Principles of Information Security and Privacy
  - Completely restructured course
  - Terms: Fall 2014, Fall 2015, Fall 2016, Fall 2019
  - Average Enrollment: 36.5
- ITIS 6010/8010: Topics in Software and Information Systems: Language-Based Security
  - New course
  - Term: Spring 2015

- Enrollment: 13

## 8 Service and Outreach

### 8.1 External Service

#### 8.1.1 Invited Talks

- “Cyber Threats & Security at the Grid Edge.” Invited Tutorial Talk. **Center for Advanced Power Engineering Research (CAPER) Fall 2023 Meeting**, Nov 6<sup>th</sup>, 2023, Clemson, SC.
- “Research Capacity Building for a Secure and Reliable Power Grid 2050.” Invited Talk. **Center for Advanced Power Engineering Research (CAPER) Fall 2023 Meeting**, Nov 6<sup>th</sup>, 2023, Clemson, SC.
- “The cyber risks of IoT growth on the average tech user: Lessons from the Smart Home, and why cybersecurity awareness and workforce development are more critical than ever.” Invited Talk. **Challey Institute for Global Innovation & Growth at North Dakota State University Human Progress and Flourishing Workshop**. April 28<sup>th</sup>, 2023. Fargo, ND.
- “Assessing Memory-Corruption Vulnerabilities in IoT Firmware”. Invited Talk. **North Dakota State University**, April 27<sup>th</sup>, 2023. Fargo, ND.
- “The cyber risks of IoT growth on the average tech user: Lessons from the Smart Home, and why cybersecurity awareness and workforce development are more critical than ever.” Invited Talk. **Center for Education Innovation Research (CEIR)**, April 19<sup>th</sup>, 2023. Charlotte, NC.
- “IoT Firmware Security: Challenges; Current & Future Directions”. Invited Talk. **Center for Cybersecurity Analytics and Automation, NSF I/UCRC, UNC** Charlotte. June 8<sup>th</sup>, 2021. Charlotte, NC.
- “Introducing the CCI SmartHome Lab”. Invited Talk. Graduate Research Seminar, UNC Charlotte. September 27<sup>th</sup>, 2019. Charlotte, NC.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **Static Analysis Team, Google Research**. December 19<sup>th</sup>, 2018. Sunnyvale, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Tech Talk. **Galois Inc.** December 18<sup>th</sup>, 2018. Portland, OR.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California San Diego**. December 14<sup>th</sup>, 2018. San Diego, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California Santa Barbara**. December 10<sup>th</sup>, 2018. Santa Barbara, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Seminar Talk. **University of California Los Angeles**. November 29<sup>th</sup>, 2018. Los Angeles, CA.

- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California Riverside**. November 19<sup>th</sup>, 2018. Riverside, CA.
- “Language-based Approaches for Securing Cross-Platform Web, Mobile, and IoT Attack Surfaces”. Technical Talk. **CyberDNA Seminar, UNC Charlotte**. February 15<sup>th</sup>, 2018. Charlotte, NC.
- “Language-based Approaches for Securing Cross-Platform Web, Mobile, and IoT Attack Surfaces”. Technical Talk. **University of California Irvine**. November 28<sup>th</sup>, 2017. Irvine, CA.
- “Model-Checking In-lined Reference Monitors”. Invited Talk. **Graduate Research Seminar, UNC Charlotte**. October 24<sup>th</sup>, 2014. Charlotte, NC.
- “Model-Checking In-lined Reference Monitors”. **Tech Talk. Galois, Inc.** Feb 5<sup>th</sup>, 2014, Portland, OR.
- “Creating a more sophisticated security platform for Flash, AIR and others”. Invited Talk. **Adobe Systems Inc.** November 19<sup>th</sup>, 2009. San Francisco, CA.

### 8.1.2 Journal Reviewer

- Internet of Things (Elsevier), Reviewer, 2023
- Computers & Security (Elsevier), Reviewer, 2023
- IEEE Access, Reviewer, 2023
- Journal of Intelligent Information Systems (Springer Nature), Reviewer, 2022
- Transactions on Information Forensics and Security (IEEE), Reviewer, 2022
- International Journal of Critical Infrastructure Protection (Elsevier), Reviewer, 2022
- Computers & Security (Elsevier), Reviewer, 2022
- Journal of Parallel and Distributed Computing (Elsevier), Reviewer, 2021
- Computers & Security (Elsevier), Reviewer, 2021
- Computers & Security (Elsevier), Reviewer, 2020
- Transactions on Dependable and Secure Computing (IEEE), Reviewer, 2017
- Computers & Security (Elsevier), Reviewer, 2015
- Runtime Verification (RV), Reviewer, 2014

### 8.1.3 Program Committees

- 2025 IEEE Security & Privacy (IEEE S&P) Conference, 2025
- 2024 IEEE Frontiers in Education (FIE) Conference, 2024
- 28<sup>th</sup> The Colloquium for Information Systems Security Education (CISSE), 2024
- ACM Special Interest Group on Computer Science Education Technical Symposium (SIGCSE), 2024
- The 19<sup>th</sup> ACM ASIA Conference on Computer and Communications Security (ACM ASIACCS 2024), 2024
- IEEE Top Picks in Hardware and Embedded Security (TPHES 2023), co-located with the International Conference On Computer Aided Design (ICCAD), 2023
- 27<sup>th</sup> The Colloquium for Information Systems Security Education (CISSE), 2023

- The 2023 IEEE International Conference in Intelligence and Security Informatics (IEEE ISI), 2023
- IEEE Top Picks in Hardware and Embedded Security (TopPicks 2021), co-located with the International Conference On Computer Aided Design (ICCAD), 2021
- ACM Special Interest Group on Computer Science Education Technical Symposium (SIGCSE), 2020
- 20th International Symposium on Practical Aspects of Declarative Languages (PADL), 2018
- 21st International Symposium on Practical Aspects of Declarative Languages (PADL), 2019

#### **8.1.4 Organizing Committees**

- Chair: A Secure & Reliable Power Grid Workshop, UNC Charlotte, March 2023
- Chair: PV Systems and Power Grid Resilience Security: Team Building and Idea Generation Workshop, April 2020
- Volunteer Coordinator/Chair: ACM Conference on Computer and Communications Security (ACM CCS), October 2017

#### **8.1.5 Community Service**

- Panel Reviewer, National Science Foundation, 2023
- Panel Reviewer, National Science Foundation, 2022
- Panel Reviewer, National Science Foundation, 2021
- Panel Reviewer for 2 Panels, National Science Foundation, 2018

### **8.2 Internal Service**

#### **8.2.1 University Committees**

- Faculty Research Grant Committee, UNC Charlotte, Aug 2022—May 2024
- Faculty Welfare Committee, UNC Charlotte, August 2020—May 2022
- Faculty Competitive Grants Committee, UNC Charlotte, August 2016—May 2017

#### **8.2.2 College Committees**

- CCI Smart & Secure Computing Cluster Hire Search Committee, Aug 2022—May 2023
- CCI Research Committee, CCI, UNC Charlotte, Aug 2019—May 2023
- ITSC Systems Course Ad-Hoc Committee, CCI, UNC Charlotte Oct—Nov 2021
- Graduate Education Committee, CCI, UNC Charlotte, August 2015—May 2016, Aug 2017—May 2019
- ITSC2175 Ad Hoc Task Force / Committee (Nov 2019)
- SIS Department Chair Review Committee, CCI, UNC Charlotte, May 2018—Nov 2018
- CS Core Courses Subcommittee, CCI, UNC Charlotte, Oct 2015

### **8.2.3 Department Committees**

- Department Review Committee, SIS Department, UNC Charlotte, Aug 2023—May 2024
- Special Department Review Committee, SIS Department, UNC Charlotte, Aug 2022—May 2023
- Faculty Mentor Committee, SIS Department, UNC Charlotte, Aug 2018—May 2020, Aug 2022—May 2024, Chair of Mentor Committee Aug 2023—May 2024
- Ph.D. Student Steering Committee, SIS Department, UNC Charlotte, Aug 2016—May 2018, Aug 2022—May 2023
- Faculty Search Committee, SIS Department, UNC Charlotte, Aug 2021—May 2022
- Research Committee, SIS Department, UNC Charlotte, Sept 2014—May 2015, Aug 2019—May 2022, Chair from Aug—Dec 2021
- Graduate Curriculum Committee, SIS Department, UNC Charlotte, Aug 2015—May 2016, Aug 2017—May 2020
- Undergraduate Curriculum Committee, SIS Dept, UNC Charlotte, Aug 2015—May 2016
- Ph.D. Applicant Review Committee, SIS Department, UNC Charlotte, Sept 2014—Dec 2014

### **8.2.4 Ph.D. Dissertation/Master's Thesis/Baccalaureate (Honors) Committees**

- Fadi Yilmaz, SIS, UNC Charlotte, Ph.D. (Chair)
- Abhinav Mohanty, SIS, UNC Charlotte, Ph.D. (Chair)
- Islam Obaidat, SIS, UNC Charlotte, Ph.D. (Chair)
- Danial Abshari, SIS, UNC Charlotte, Ph.D. (Chair)
- Yaw Frempong, CS, UNC Charlotte, M.S. (Chair)
- Erik Akeyson, SIS, UNC Charlotte, M.S. (Chair)
- Shaikh Islam, SIS, UNC Charlotte, M.S. (Chair)
- Mahmoud Mohammadi, SIS, UNC Charlotte, Ph.D. (Member)
- Ambarish Regmi, SIS, UNC Charlotte, Ph.D. (Member)
- Erfan Al-Hossami, CS, UNC Charlotte, Ph.D. (Member)
- Tiancan Pang, EE, UNC Charlotte, Ph.D. (Graduate Faculty Representative)
- Bennett Kahn, Tulane University, Undergraduate (Thesis Third Reader)

### **8.2.5 Other Service**

- Faculty Advisor for ACM-W UNC Charlotte Chapter, 2018—2019
- IEEE Computer Society, Member