

CURRICULUM VITAE

Dr. Meera Sridhar

Assistant 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) 687-1887
Fax: (704) 687-1652
Email: 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

- Aug 2014—Present 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 the NSF CISE Research Initiation Initiative (CRII) Award for “A Language-based Approach to Hybrid Mobile App Security” as sole-PI. 2016—2019, \$209,985
- Actively involved in building the cyber-security research and education program at UNCC through course and curriculum development, and creating a solid software, mobile and IoT security and formal methods research team; highly driven towards helping establish UNCC as a premier research institution for cyber-security
- Supervising 3 PhD students, supervising/supervised 13 MS, and supervising/supervised 8 UG 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 through special topics courses and a fully restructured Software Assurance course (ITIS 6150/8150); introduced active-learning exercises across all security and privacy topics in the introductory undergraduate and graduate intro security and privacy courses (ITIS 3200/6200/8200)
- Lauded by Adobe Systems Inc. for my research on Flash & AIR security, and invitation by Adobe to present this work at the Adobe Flash headquarters

4 Publications

4.1 Peer Reviewed Journal Publications

- [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. Venkatakrisnan. 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: 1.592, 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
- [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

- [C11] Kelly Virgil English, Islam Obaidat, and **Meera Sridhar**. Practical Experience Report: Conducting Code-Injection Attacks on Connman and Dnsmasq for IoT Devices. In Review.
- [C10] **Meera Sridhar**, Archit Khullar, Kshitij Sudhir Gorde, Rahul Rachapalli, Noseong Park, and Phu H. Phung. A Novel Bytecode Level Static Analysis Approach to Detecting Malicious Behaviors in Java Applications. In Review.
- [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.

- [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.
- [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 *12th 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
- [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
- [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
- [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

- [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.
- [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. Venkatakrisnan. 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 Other Publications

- [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** (Sole PI). NSF-CNS #1566321. SaTC: CRII: A Language-based Approach to Hybrid Mobile App Security. September 1, 2016—August 31, 2019, \$209,985.00.

6 Student Supervision

6.1 Doctoral Students Supervised

- Abhinav Mohanty. Spring 2015—present. Ph.D. in progress.
- Fadi Yilmaz. Spring 2015—present. Ph.D. in progress.
- Islam Obaidat, Spring 2017—present. Ph.D. in progress.

6.2 Master's Students Supervised

- Vinmay Nair. Research Assistant, Spring 2015.
- Rishikesh Walawalker. Research Assistant, Spring 2015.
- Mounica Chirva. Research Assistant and Independent Study, Spring 2016.
- Vasant Tendulkar, Research Assistant, Spring 2016.
- David Farthing, Research Assistant, Summer 1, 2016.
- Arun Ramakrishnan, Independent Study, Fall 2016.
- Rahul Rachapalli, Independent Study, Spring 2017; Research Assistant, Summer, Fall 2017.
- Kshitij Gorde, Research Assistant and Independent Study, Spring 2017.
- Archit Khullar, Research Assistant, Spring 2018.
- Karthick Selvaraj, Independent 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.

6.3 Bachelor's 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
- Zachary Taylor, Fall 2018 & Spring 2019
- John Watson, Spring 2019
- Gavin Sroczynski, Spring 2019

7 Teaching

7.1 Major Accomplishments

- Created a new, fully-flipped special topics course on Mobile and IoT 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

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
 - Average Enrollment: 69.75
- ITIS 4990: Undergraduate Research
 - New Course
 - Terms: Fall 2018, Spring 2019
 - Average Enrollment: 6

7.2.2 Graduate Courses

- 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
 - Average Enrollment: 33
- 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

- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **Static Analysis Team, Google Research**. December 19th, 2018. Sunnyvale, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Tech Talk. **Galois Inc**. December 18th, 2018. Portland, OR.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California San Diego**. December 14th, 2018. San Diego, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California Santa Barbara**. December 10th, 2018. Santa Barbara, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Seminar Talk. **University of California Los Angeles**. November 29th, 2018. Los Angeles, CA.
- “Runtime Monitors for Hybrid Mobile Apps and Other Stories”. Invited Talk. **University of California Riverside**. November 19th, 2018. Riverside, CA.
- “Language-based Approaches for Securing Cross-Platform Web, Mobile, and IoT Attack Surfaces”. Technical Talk. **CyberDNA Seminar, UNC Charlotte**. February 15th, 2018. Charlotte, NC.
- “Language-based Approaches for Securing Cross-Platform Web, Mobile, and IoT Attack Surfaces”. Technical Talk. **University of California Irvine**. November 28th, 2017. Irvine, CA.

- “Model-Checking In-lined Reference Monitors”. Invited Talk. **Graduate Research Seminar, UNC Charlotte**. October 24th, 2014. Charlotte, NC.
- “Model-Checking In-lined Reference Monitors”. **Tech Talk. Galois, Inc.** Feb 5th, 2014, Portland, OR.
- “Creating a more sophisticated security platform for Flash, AIR and others”. Invited Talk. **Adobe Systems Inc.** November 19th, 2009. San Francisco, CA.

8.1.2 Journal/Conference Reviewer

- IEEE Transactions on Dependable and Secure Computing (IEEE), Reviewer, 2017
- Computers & Security (Elsevier), Reviewer, 2015
- Runtime Verification (RV), Reviewer, 2014

8.1.3 Program Committees

- 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

- Volunteer Coordinator/Chair: ACM Conference on Computer and Communications Security (CCS), 2017

8.1.5 Professional Memberships/Affiliations

- ACM, ACM-W, WiCyS

8.1.6 Community Service

- Panel Reviewer for 2 Panels, National Science Foundation, 2018

8.2 Internal Service

8.2.1 University Committees

- Faculty Competitive Grants Committee, UNCC, August 2016—present

8.2.2 College Committees

- Graduate Education Committee, CCI, UNCC, August 2015—present
- CS Core Courses Subcommittee, CCI, UNCC, Oct 2015

8.2.3 Department Committees

- Faculty Search Committee, SIS Department, UNCC, Spring 2019
- Faculty Mentor Committee, SIS Department, UNCC, Aug 2018—present

Dr. Meera Sridhar

- Graduate Curriculum Committee, SIS Department, UNCC, Aug 2015—May 2016, Aug 2017—present
- Ph.D. Student Steering Committee, SIS Department, UNCC, Aug 2016—May 2018
- Undergraduate Curriculum Committee, SIS Dept, UNCC, Aug 2015—May 2016
- Research Committee, SIS Department, UNCC, Sept 2014—May 2015
- Ph.D. Applicant Review Committee, SIS Department, UNCC, Sept 2014—Dec 2014

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

- Mohammed Noraden Alsaleh, SIS, UNCC, Ph.D.
- Mahmoud Mohammadi, SIS, UNCC, Ph.D.
- Lida Safarnejad, SIS, UNCC, Ph.D. in progress
- Ambarish Regmi, SIS, UNCC, Ph.D. in progress

8.2.5 Other Service

- Faculty Advisor for ACM-W UNCC Chapter, 2018—present
- Women in Cybersecurity (WiCyS) UNCC Sponsor representation booth, 2019