Pratik Satam | Curriculum Vitae

Assistant Professor
Systems and Industrial Engineering
University of Arizona
Tucson, Arizona 85721

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Education

Doctor of Philosophy,   **May 2019**
Advisor: Dr. Salim Hariri
Major: Electrical and Computer Engineering
Minor: Computer Science
University of Arizona

Master of Science,   **May 2015**
Major: Electrical and Computer Engineering
University of Arizona

Bachelor of Engineering,   **May 2013**
Major: Electronics and Telecommunications Engineering
Mumbai University

Appointment History

Assistant Professor   15 August 2022- Current
Department of Systems and Industrial Engineering
The University of Arizona

Research Assistant Professor   July 2019- 14 August 2022
Department of Electrical and Computer Engineering
The University of Arizona

Research Assistant
Autonomic Computing Lab   December 2013-May 2019
Teaching Assistant
ECE 509: Cyber Security   May 2015-May 2019
ECE 677: Distributed Computing   May 2015-May 2019

Funding Summary

Pending External Grants (PI/Co-PI):   **My Total Share: $571,250**

1. National Science Foundation (NSF), CCRI: Planning-C: Federated Cloud Platform for Networked Cyber Physical Systems Research, $99,999 (my share $50,000) Starting October 2022; PI

2. Korea Institute of for Advancement of Technology (KIAT), Building Enablers for Multi Industry Sectors Collaborative Federated Open Platforms & Assets, as a Foundation for

Cross-Industry End-to-End Services Innovation and Delivery AGILITY in the 5G & Beyond Era; $802,500 (my share $401,250); Approved December 7, 2021; Co-PI

3. Department of Defense (DoD), Viceroy program, "Metro-Detroit Regional Virtual Vehicle Cybersecurity Institute"; $120,000; 2022-2024 ; PI

Peer Reviewed Journal Publications

1. Gao X., Ram S., Philip R., Rodriguez J., Szep J., Shao S., Satam P., Pacheco J., Hariri S., "Selecting Post-Processing Schemes for Accurate Detection of Small Objects in Low-Resolution Wide-Area Aerial Imagery", Remote Sens. 2022, 14, 255. https://doi.org/10.3390/rs14020255.

2. Satam, Shalaka, Pratik Satam, Jesus Pacheco, and Salim Hariri. "Security framework for smart cyber infrastructure." *Cluster Computing* (2021): 1-12.

3. Wu, Chongke, Sicong Shao, Cihan Tunc, Pratik Satam, and Salim Hariri. "An explainable and efficient deep learning framework for video anomaly detection." *Cluster Computing*(2021): 1-23.

4. P. Satam and S. Hariri, "WIDS: An Anomaly Based Intrusion Detection System for Wi-Fi (IEEE 802.11) Protocol," in *IEEE Transactions on Network and Service Management*, doi: 10.1109/TNSM.2020.3036138.

5. Gao, Xin, Jeno Szep, Pratik Satam, Salim Hariri, Sundaresh Ram, and Jeffrey J. Rodriguez. "Spatio-Temporal Processing for Automatic Vehicle Detection in Wide-Area Aerial Video." *arXiv preprint arXiv:2010.14025* (2020).

6. AlShawi, Amany, Pratik Satam, Firas Almoualem, and Salim Hariri. "Effective Wireless Communication Architecture for Resisting Jamming Attacks." *IEEE Access* (2020).

7. Pacheco, Jesus, Victor H. Benitez, Luis C. Félix-Herrán, and Pratik Satam. "Artificial Neural Networks-Based Intrusion Detection System for Internet of Things Fog Nodes." *IEEE Access* 8 (2020): 73907-73918.

8. Skaria, Rinku, Pratik Satam, and Zain Khalpey. "Opportunities and Challenges of Disruptive Innovation in Medicine Using Artificial Intelligence." *The American Journal of Medicine*(2020), Elsevier.

9. Pacheco, Jesus, Cihan Tunc, Pratik Satam, and Salim Hariri. "Secure and resilient cloud services for enhanced living environments." *IEEE Cloud Computing* 3, no. 6 (2016): 44-52.

10. Satam, Pratik, Hamid Alipour, Youssif B. Al-Nashif, and Salim Hariri. "Anomaly Behavior Analysis of DNS Protocol." *J. Internet Serv. Inf. Secur.* 5, no. 4 (2015): 85-97.

11. Alipour, Hamid, Youssif B. Al-Nashif, Pratik Satam, and Salim Hariri. "Wireless anomaly detection based on IEEE 802.11 behavior analysis." *IEEE transactions on information forensics and security* 10, no. 10 (2015): 2158-2170.

Peer Reviewed Book Chapters

1. Pratik Satam, Shalaka Satam, Salim Hariri, and Amany Alshawi Anomaly, "Behavior Analysis of IoT Protocols.", in "Modeling and Design of Secure Internet of Things.", Editors: Drs. Charles A Kamhoua, Laurent Njilla, Alexander Kott, and Sachin Shetty, IEEE Press, 2020.

Peer Reviewed Conference Publications

1. Shao, Sicong, Pratik Satam, Shalaka Satam, Khalid Al-Awady, Gregory Ditzler, Salim Hariri, and Cihan Tunc. "Multi-Layer Mapping of Cyberspace for Intrusion Detection." In *2021 IEEE/ACS 18th International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-8. IEEE, 2021.
2. Torres A., Satam P., Bose T., "Machine Learning Classifiers for Anomaly Based Wireless Intrusion Detection", International Telemetry Conference, 2021.
3. Satam, Shalaka, Pratik Satam, and Salim Hariri. "Multi-level Bluetooth Intrusion Detection System." In *2020 IEEE/ACS 17th International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-8. IEEE, 2020.
4. Yao, Likai, Cihan Tunc, Pratik Satam, and Salim Hariri. "Resilient Machine Learning (rML) Ensemble Against Adversarial Machine Learning Attacks." In *International Conference on Dynamic Data Driven Application Systems*, pp. 274-282. Springer, Cham, 2020
5. Satam, Pratik, Shalaka Satam, and Salim Hariri. "Bluetooth intrusion detection system (BIDS)." In *2018 IEEE/ACS 15th International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-7. IEEE, 2018.
6. Hess, Samuel, Pratik Satam, Gregory Ditzler, and Salim Hariri. "Malicious HTML File Prediction: A Detection and Classification Perspective with Noisy Data." In *2018 IEEE/ACS 15th International Conference on Computer Systems and Applications (AICCSA)*, pp. 1-7. IEEE, 2018.
7. Satam, Pratik. "Anomaly Based Wi-Fi Intrusion Detection System." In *2017 IEEE 2nd International Workshops on Foundations and Applications of Self* Systems (FAS* W)*, pp. 377-378. IEEE, 2017.
8. Satam, Pratik, Jesus Pacheco, Salim Hariri, and Mohommad Horani. "Autoinfotainment security development framework (ASDF) for smart cars." In *2017 International Conference on Cloud and Autonomic Computing (ICCAC)*, pp. 153-159. IEEE, 2017.
9. Almoualem, Firas, Pratik Satam, Jang-Geun Ki, and Salim Hariri. "SDR-Based Resilient Wireless Communications." In *2017 International Conference on Cloud and Autonomic Computing (ICCAC)*, pp. 114-119. IEEE, 2017.
10. Shao, Sicong, Cihan Tunc, Pratik Satam, and Salim Hariri. "Real-time irc threat detection framework." In *2017 IEEE 2nd International Workshops on Foundations and Applications of Self* Systems (FAS* W)*, pp. 318-323. IEEE, 2017.
11. Pacheco, Jesus, Cihan Tunc, Pratik Satam, and Salim Hariri. "Secure and resilient cloud services for enhanced living environments." *IEEE Cloud Computing* 3, no. 6 (2016): 44-52.
12. Satam, Pratik, Douglas Kelly, and Salim Hariri. "Anomaly behavior analysis of website vulnerability and security." In *2016 IEEE/ACS 13th International Conference of Computer Systems and Applications (AICCSA)*, pp. 1-7. IEEE, 2016.
13. Hariri, Salim, Cihan Tunc, Pratik Satam, Firas Al-Moualem, and Erik Blasch. "Dddas-based resilient cyber battle management services (d-rcbms)." In *Proceedings of the 2015 IEEE 22nd International Conference on High Performance Computing Workshops (HiPCW)*, pp. 65-65. 2015.
14. Tunc, Cihan, Salim Hariri, Fabian De La Peña Montero, Farah Fargo, and Pratik Satam. "CLaaS: Cybersecurity Lab as a Service--design, analysis, and evaluation." In *2015 International Conference on Cloud and Autonomic Computing*, pp. 224-227. IEEE, 2015.

15. Satam, Pratik, Hamid Alipour, Youssif Al-Nashif, and Salim Hariri. "Dns-ids: Securing dns in the cloud era." In *2015 International Conference on Cloud and Autonomic Computing*, pp. 296-301. IEEE, 2015.
16. Tunc, Cihan, Salim Hariri, Fabian De La Peña Montero, Farah Fargo, Pratik Satam, and Youssif Al-Nashif. "Teaching and Training Cybersecurity as a Cloud Service." In *2015 International Conference on Cloud and Autonomic Computing*, pp. 302-308. IEEE, 2015.
17. Satam, Pratik. "Cross layer Anomaly based intrusion detection system." In *2015 IEEE International Conference on Self-Adaptive and Self-Organizing Systems Workshops*, pp. 157-161. IEEE, 2015.

Non-Peer Reviewed Publications
1. Satam, Pratik. "A Methodology to Design Intrusion Detection Systems (IDS) for IoT/Networking Protocols." (2019). (Ph.D. Dissertation)
2. Satam, Pratik. "An anomaly behavior analysis intrusion detection system for wireless networks." (2015). (Master's Thesis)

Books Authored
1. Sharma, Naveen, Satam Pratik, Parashar, Manish, and Hariri Salim, "Autonomic Computing (Edition 2)", CRC Press, Taylor and Francis Press, (To be published December 2022).

Publications Under Review
1. Ditzler, G., Gupta S., Satam P., Hariri S., "Online Ensemble Learning for Robust Intrusion Detection with Large Volume Data Streams", IEEE Transactions on Network and Service Management (submitted 2021).
2. Almazayad I., Wu C., Satam P., Grijalva C., Kolcu B., Satam S., Tunc C., Hariri S., "Federated Cybersecurity Testbed as a Service: Federation of Dispersed Isolated Testbed", IEEE Access (Submitted March 2022).

Planned Submissions
1. Satam P., Shao S., Zhang W., Ditzler G., Satam S., Estrada A., Wali-ur-Rahman M., Abrar M., Hariri S., "A Framework for Profiling User-Computer Resource Utilization for Host Intrusion Detection", IEEE transactions on information forensics and security
2. Satam P., Grijalva C., Gregory D., Akoglu, A., Hariri S., "Industrial Control Systems Security using Anomaly Behavior Analysis", Planned submission to IEEE Transactions on Industrial Informatics
3. Satam P., Ditzler G., "Exploratory and Causative Attacks Against Intrusion Detection Systems", TBD.
4. Wu C., Satam P., Grijalva C., Tunc C., Satam S., Alzyad I., Salim Hariri, "Federated Cyber Security Testbed as a Service (FCTaaS)". Planned Submission to IEEE Transactions on Dependable and Secure Computing

Proposals Reviewed
1. Member of NSF proposal review panel in March 2021.

Research Visits and Invited Talks

1. Anomaly Behavior Analysis of Wireless Network, University of Chicago (UIC), Chicago, USA, October 2015.
2. DNS-IDS: Securing DNS in cloud environment, Universtite Claude Bernard Lyon 1, Lyon, France, January 2016
3. Research in Cybersecurity, CAT Vehicle Program, University of Arizona, Tucson, USA, May 2016
4. Research in Cybersecurity, BASIS Charter School, University of Arizona, Tucson, USA, October 2016
5. Wireless Security in smart vehicles, Hermosillo's Institute of Technology (ITH), Hermosillo, Mexico, April 2017
6. Wireless Security, PUF, University of Arizona, Tucson USA, September 2017
7. Wireless Security, Texas Tech University, Lubbock, USA, October 2017
8. Smart Car and Infotainment System Security, Universtite Claude Bernard Lyon 1, Lyon, France, December 2017
9. Smart Vehicle Security, Universidad De Sonora, Hermosillo, Mexico, April 2018
10. Research Visit, 802Secure, San-Francisco, USA, May 2018
11. Smart Vehicle Security, Universtite Claude Bernard Lyon 1, Lyon, France, July 2018
12. Wi-Fi Security, Universtite Claude Bernard Lyon 1, Lyon, France, December 2018
13. Wi-Fi Security, Texas State University, San Marcos, USA, October 2019
14. Testbed Development, American University of Malta, Cosicua, Malta, December 2019
15. Concepts of Research, Padmabhushan Vasantdada Patil Pratisthans College of Engineering (PVPPCOE), Mumbai, India, March 2020
16. Importance of Wi-Fi Security, Modern College, Pune, India, March 2020
17. Importance of Wi-Fi Security, Pune College, Pune, India, March 2020
18. Importance of Cyber Security, Department of Civil Defense, Maharashtra State Government, India, March 2020
19. Attacks on Wi-Fi networks, Universidad De Sonora, Hermosillo, Mexico, September 2020

Students Mentored

1. Students mentored in Autonomic Computing Lab (ACL) with Dr. Salim Hariri
   - Ph.D. Students
     - i. Shalaka Satam   May 2019 – Present
     - ii. Likai Yao   May 2019 – Present
     - iii. Clarisa Grijalva   May 2019 – Present
     - iv. Xin Gao   May 2019 – Present
     - v. Chongke Wu   May 2019 – Present
     - vi. Theodore Ha   May 2019 – Present
     - vi. Ibrahim Almazyad   August 2020 –Present
     - vii. Ivan Kawaminami   January 2021–Present
     - viii. Arminda Estrada   July 2021– Present

- o Masters Students
  - i. Birkan Kolcu   May 2019 –May 2020
  - ii. Weiyang Zhang   January 2021–Present
  - iii. Murad Abrar   May 2021 – Present
  - iv. Mohammad Wali-ur-Rahman   August 2021 –Present

- o Undergraduate Students
  - i. Weiyang Zang   May 2019 – December 2020
  - ii. Jupeng Wang   May 2019 – December 2020
  - iii. Carter Philipp   September 2020 – Present
  - iv. Ethan Nguyen   September 2021 – Present

2. PACT REU Summer program (Summer 2020)
   Guided the following five students for their summer project in setting up OpenVAS for cloud-based deployment and analyzing security of vulnerable virtual machines.
   - a. Richelle Javier (UofA)
   - b. Kendall Hall (Howard University)
   - c. Derek Major (Howard University)
   - d. Roberto Kupps (NTU)
   - e. Deirdra Deswood (NTU)

3. PACT REU Spring program (Spring 2021)
   Mentored following undergraduate students in research on cybersecurity.
   - a. Connie Sun (UofA)
   - b. Joel Yazzie (NTU)
   - c. Naomi Reynolds (UofA)
   - d. Richelle Javier (UofA)
   - e. Kelly Morgan (NTU)
   - f. Brain Yazzie (NTU)
   - g. Amy Paul (UofA)
   - h. Georgia West (UofA)
   - i. Rina Romero (UofA)

Courses Co-Developed

1. ECE 524 Fundamentals of Cloud Security: Assisted in development of course at the College of Electrical and Computer Engineering at the University of Arizona
2. UA Network Security Certification: Developed network security certification for the University of Arizona Continuing and Professional Education
3. UA Computer Security Certification: Developed computer security certification for the University of Arizona Continuing and Professional Education
4. UA Penetration Testing Certification: Developed Penetration Testing Certification for the University of Arizona Continuing and Profession Education

Courses Taught

- o Spring 2018
  - ECE 509: Cyber Security- Concept, Theory and Practices
- o Spring 2019
  - ECE 509: Cyber Security- Concept, Theory and Practices
- o Fall 2020
  - ECE 509: Cyber Security- Concept, Theory and Practices
- o Spring 2021   [Instructor on
  - ECE 524: Fundamentals of Cloud Security   Record]
- o Fall 2021
  - ECE 509: Cyber Security- Concept, Theory and Practices
- o Spring 2022   [Instructor on
  - ECE 524: Fundamentals of Cloud Security   Record]

Professional Activities and Services
- o Editorship and Boards
  - Associate Editor for Cluster Computing, Springer 2019-present

- o Conference Organization
  - Part of organization committee for ACS/IEEE International Conference on Computing and Applications (AICCSA 2020).

- o Reviewer for Journals
  - Reviewer for Cluster Computing, Springer
  - Reviewer for IEEE Transactions on Neural Networks and Learning Systems
  - Reviewer for IEEE Access Journal

- o Awards
  - Best Poster Award, CAC conference, Tucson, Az, USA, 2016
  - Ratan Tata Scholarship for meritorious engineering students, 2009-2010