

Sara Rampazzi

Department of Computer and Information
Science and Engineering

University of Florida
Florida Institute for Cybersecurity
Research (FICS)
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Research areas Cyber-physical system security & privacy, embedded systems design, modeling, and simulation with application to medical devices, automotive, and Internet of Everything

Education **PhD in Electronics, Computer Science and Electrical Engineering**
University of Pavia (Italy), **2014**.

MEng in Computer Science Engineering
University of Pavia (Italy), **2010**.

BS in Computer Science Engineering
University of Pavia (Italy), **2008**.

Grants and awards

PI:

- **Toyota InfoTech Lab Research grant** on “Cyber-Physical Attacks on CAV Perception”, 100K, 2023
- **Toyota InfoTech Lab Research grant** on “Secure Autonomous Driving Sensor Hardware and Hardware Designs”, 70K, 2022
- **Meta Award** Explorations of Trust in AR, VR, and Smart Devices, 75K, 2020

Co-PI:

- **NSF Grant Award #2031077: RAPID: SaTC: COVID19:** Science of using wirelessly powered sensors to quickly scale up verifiable decontamination of individual N95 respirator masks, 200K, 2020

Recognitions:

- **Medtronic Outstanding Research Contributor:** For researchers recognized for the value of their contributions to the security of Medtronic medical devices - <https://global.medtronic.com/xg-en/product-security/outstanding-research-contributors.html>
- Finalist: **ISSNAF Mario Gerla Young Investigator Award 2021** for research in Computer Science - <https://www.issnaf.org/young-investigator-awards-finalists-2021>

Academic positions

Assistant Professor
Computer & Information Science & Engineering
University of Florida

Jan 2021-Present

Research Investigator
Electrical Engineering & Computer Science,
University of Michigan

Feb 2018-Dec 2020

Intermittent Lecturer
Electrical Engineering & Computer Science,
University of Michigan

Jan 2019-Jan 2020

	Affiliate Researcher Electrical Engineering & Computer Science, University of Michigan	Aug 2017-Feb 2018
	Postdoc fellow Computer Science Engineering, University of Pavia	2014
Research experience	Senior personnel on THAW University of Michigan	2018-2021
	Principal Researcher for MCity PASS project University of Michigan	2018-2020
	Visiting researcher Univ. de Las Palmas de Gran Canaria (<i>Spain</i>)	Spring 2014
Teaching experience	Instructor <i>Course: CIS4360 - Computer and Information Security</i> Dept. of Computer and Information Science and Engineering, University of Florida	Fall 2021 - Present
	<i>Course: CIS4930/6930 - Special Topics in CISE: Cyber-physical System Security</i> Dept. of Computer and Information Science and Engineering, University of Florida	
	Lecturer <i>Course: EECS 496 - Major Design Experience Professionalism</i> Dept. of Electrical Engineering and Computer Science, University of Michigan	Winter 2019
	Instructor of record <i>Course: C coding</i> Department of Mathematics, University of Pavia	2013-2014
	Instructor of record <i>Course: Introduction to Computer Systems II</i> Computer Science Engineering, University of Pavia	2010-2012
	Teaching Assistant <i>Course: Introduction to Computer Systems</i> Computer Science Engineering, University of Pavia	2007-2010
Industry experience	Firmware developer for LTE systems <i>Azcom Technology</i> <i>Client: Blue Danube Inc.</i>	2016-2017
	Software engineer consultant <i>Alten Italia</i> <i>Client: Leonardo S.p.A.</i> <i>Client: Magneti Marelli (Fiat Chrysler Automobiles Group)</i>	2015-2016

Refereed
conference
publications

* co-first and
corresponding
author

° corresponding
(senior) author

Complete list available at:

<https://scholar.google.com/citations?user=l9d0CrAAAAAJ&hl=en>

Eric Gustafson, Paul Grosen, Nilo Redini, Saagar Jha, Andrea Continella, Ruoyu Wang, Kevin Fu, Sara Rampazzi, Christopher Kruegel, Giovanni Vigna “**Shimware: Toward Practical Security Retrofitting for Monolithic Firmware Images**”, To appear on *the 26th International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2023)*

Yazhou Tu, Liqun Shan, Md Imran Hossen, Sara Rampazzi, Kevin Butler, Xiali Hei “**Auditory Eyesight: Demystifying μ s-Precision Keystroke Tracking Attacks on Unconstrained Keyboard Inputs**”, To appear on *the Proceedings of USENIX Security 2023*.

Dipkamal Bhusal, Rosalyn Shin, Ajay Ashok Shewale, Monish Kumar Manikya Veerabhadran, Michael Clifford, Sara Rampazzi, and Nidhi Rastogi, “**SoK: Modeling Explainability in Security Analytics for Interpretability, Trustworthiness, and Usability**”, To appear on the *18th International Conference on Availability, Reliability and Security (ARES 2023)*

Jennifer Sheldon, Weidong Zhu, Adnan Abdullah, Kevin Butler, Md Jahidul Islam, Sara Rampazzi, “**Deep Note: Can Acoustic Interference Damage the Availability of Hard Disk Storage in Underwater Data Centers?**”, In *Proceedings of the 15th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage 2023)* (**SK Hynix Best Paper Award**)

Sri Hrushikesh Varma Bhupathiraju, Jennifer Sheldon, Luke A. Bauer, Vincent Bindschaedler, Takeshi Sugawara, Sara Rampazzi, “**EMI-LiDAR: Uncovering Vulnerabilities of LiDAR Sensors in Autonomous Driving Setting using Electromagnetic Interference**”, In *Proceedings of ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec 2023)*

Yulong Cao, Sri Hrushikesh Varma Bhupathiraju, Pirouz Naghavi, Takeshi Sugawara, Z. Morley Mao, Sara Rampazzi “**You Can’t See Me: Physical Removal Attacks on LiDAR-based Autonomous Vehicles Driving Frameworks**”, To appear on the *Proceedings of USENIX Security 2023*.

Yan Long, Pirouz Naghavi, Blas Kojusner, Kevin Butler, Sara Rampazzi, Kevin Fu, “**Side Eye: Characterizing the Limits of POV Acoustic Eavesdropping from Smartphone Cameras with Rolling Shutters and Movable Lenses**”, In *Proceedings of IEEE Security and Privacy 2023*.

Takami Sato, Sri Hrushikesh Varma Bhupathiraju, Michael Clifford, Takeshi Sugawara, Qi Alfred Chen, Sara Rampazzi “**WIP: Infrared Laser Reflection Attack Against Traffic Sign Recognition Systems**”, In *Proceedings of VehicleSec Symposium 2023*. (**ETAS Best WIP/Short Paper Award, Qualcomm Best Demo Award**) (Acc. Rate 28.22%).

Cassidy Gibson, Vanessa Frost, Katie Platt, Washington Garcia, Luis Vargas, Sara Rampazzi, Vincent Bindschaedler, Patrick Traynor, Kevin Butler, “**Analyzing the Monetization Ecosystem of Stalkerware**”, In *Proceedings on Privacy Enhancing Technologies (PETS) 4*: 105-119, 2022 (Acc. Rate 24%).

Nidhi Rastogi, Sara Rampazzi, Michael Clifford, Miriam Heller, Matthew Bishop, Karl Levitt, “**Explaining RADAR features for detecting spoofing attacks in Connected Autonomous Vehicles**”, In *Proceedings of Workshop on Explainable Agency in Artificial Intelligence, 2022*.

Takeshi Sugawara, Ben Cyr, [Sara Rampazzi](#)^o, Daniel Genkin, Kevin Fu, “**Light Commands: Laser-Based Audio Injection on Voice-Controllable Systems**”, in *29th USENIX Security Symposium (USENIX)*, August 2020 (Acc. Rate 16.1%).

[Sara Rampazzi](#)^{*}, Yazhou Tu, Bin Hao, Angel Rodriguez, Kevin Fu, and Xiali Hei, “**Trick or Heat? Attack on Amplification Circuits to Abuse Critical Temperature Control Systems**”, in *Proceedings of the 2019 ACM SIGSAC Conference on Computer and Communications Security (CCS)*, November 2019 (Acc. Rate 17%).

Yulong Cao, Chaowei Xiao, Benjamin Cyr, Yimeng Zhou, Won Park, [Sara Rampazzi](#)^o, Qi Alfred Chen, Kevin Fu, Z. Morley Mao, “**Adversarial Sensor Attack on LiDAR-based Perception in Autonomous Driving**”, in *Proceedings of the 2019 ACM SIGSAC Conference on Computer and Communications Security (CCS)*, November 2019 (Acc. Rate 17%).

Connor Bolton, [Sara Rampazzi](#), Chaohao Li, Andrew Kwong, Wenyuan Xu, Kevin Fu, “**Blue Note: How Intentional Acoustic Interference Damages Availability and Integrity in Hard Disk Drives and Operating Systems**”. In *Proceedings of the 39th Annual IEEE Symposium on Security and Privacy*, May 2018 (Acc. Rate 11.5%).

[Sara Rampazzi](#), Francesco Loporati, Giovanni Danese, Marabelli Franco, Andrea Valsesia, “**A Novel Portable Surface Plasmon Resonance Based Imaging Instrument for On-Site Multi-Analyte Detection**”. In *Federated Conference on Computer Science and Information Systems (FedCSIS '13)*, Sept 2013.

[Sara Rampazzi](#), Giovanni Danese, Lucia Fornasari, Francesco Loporati, Franco Marabelli, Nelson Nazzicari, Andrea Valsesia, “**Lab On Chip: Portable Optical Device for On-Site Multi-parametric Analysis**”. In *IEEE Euromicro Conference on Digital System Design (Euromicro DSD'13)*, 4-6 Sept 2013, pp. 807-810.

**Refereed
journal
publications**

Muhammad Sajidur Rahman, Pirouz Naghavi, Blas Kojusner, Sadia Afroz, Byron Williams, [Sara Rampazzi](#), Vincent Bindschaedler, “**PermPress: Machine Learning-Based Pipeline to Evaluate Permissions in App Privacy Policies**”, *IEEE Access*, 2022 (IF 3.476).

Yan Long, Alexander Curtiss, [Sara Rampazzi](#), Josiah Hester, Kevin Fu, “**VeriMask: Sensor Platform for Decontamination of N95 Masks**”, In *GetMobile: Mobile Computing and Communications* 26, no. 2, 2022.

Yan Long, [Sara Rampazzi](#), Takeshi Sugawara, Kevin Fu, “**Protecting COVID-19 Vaccine Transportation and Storage from Analog Cybersecurity Threats**”, In *Biomedical Instrumentation & Technology* 55, no. 3, Oct 2021 (IF 0.13).

Yan Long, Alexander Curtiss, [Sara Rampazzi](#), Josiah Hester, Kevin Fu, “**VeriMask: Facilitating Decontamination of N95 Masks in the COVID-19 Pandemic: Challenges, Lessons Learned, and Safeguarding the Future**”, In *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT)*, Sept 2021 (IF 4.16).

Simone Marini, Francesca Vitali, [Sara Rampazzi](#), Andrea Demartini, Tatsuya Akutsu, “**Protease target prediction via matrix factorization**”. In *Bioinformatics*, 29 Aug. 2018, bty746 (IF 6.9).

Sara Rampazzi, Giovanni Danese, Francesco Leporati, Franco Marabelli, “**A Localized Surface Plasmon Resonance-Based Portable Instrument for Quick On-Site Biomolecular Detection**”. In IEEE Transactions on Instrumentation and Measurement, Vol. 65 Is. 2, 1 Dec. 2015, pp. 317-327 (IF 5.3).

Journal publications as member of the N95Decon Consortium

Complete list available at <https://www.n95decon.org/publications>

Loïc Anderegg, John Doyle, Margaret L Gardel, Amit Gupta, Christian Hallas, Yuri Lensky, Nancy G Love, Bronwyn A Lucas, Edward Mazenc, Cole Meisenhelder, Ajay Pillarisetti, Daniel Ranard, Allison H Squires, Jessica Vechakul, Nathaniel B Vilas, Stuart Williams, Daniel Wilson, Tyler N Chen, N95DECON Consortium, “**Heat and Humidity for Bioburden Reduction of N95 Filtering Facepiece Respirators**”, Applied Biosafety, Jan 2021 (IF 0.72).

Samantha M Grist, Alisha Geldert, Anjali Gopal, Alison Su, Halleh B Balch, Amy E Herr, N95DECON Consortium “**Current Understanding of Ultraviolet-C Decontamination of N95 Filtering Facepiece Respirators**”, Applied Biosafety, Jan 2021 (IF 0.72).

Sylvia J Smullin, Branden D Tarlow, N95DECON Consortium, “**Room Temperature Wait and Reuse for Bioburden Reduction of SARS-CoV-2 on N95 Filtering Facepiece Respirators**”, Applied Biosafety, Jan 2021 (IF 0.72).

David Rempel, John Henneman, James Agalloco, Jill Crittenden, N95DECON Consortium “**Hydrogen Peroxide Methods for Decontaminating N95 Filtering Facepiece Respirators**”, Applied Biosafety, Jan 2021, (IF 0.72).

David Rempel, N95DECON Consortium, “**Scientific Collaboration During the COVID-19 Pandemic: N95DECON.org**”. In Annals of Work Exposures and Health, June 2020, (IF 1.960).

Posters & Demo papers

Cesar Arguello, Hunter Searle, Sara Rampazzi, Kevin Butler, “**A Practical Methodology for ML-Based EM Side Channel Disassemblers**”, In the Poster Session of the 7th IEEE European Symposium on Security and Privacy 2022.

Yulong Cao, Jiaxiang Ma, Kevin Fu, Sara Rampazzi, Z. Morley Mao, “**Automated Tracking System For LiDAR Spoofing Attacks On Moving Targets**”. In the Demo Session of Automotive and Autonomous Vehicle Security (AutoSec) Workshop 2021, Feb 2021. **(Best Demo Award Runner-up)**

Yan Long, Alexander Curtiss, Sara Rampazzi, Josiah Hester, Kevin Fu, “**Automating Decontamination of N95 Masks for Frontline Workers in the COVID-19 Pandemic**”. In the Poster Session of the ACM Conference on Embedded Networked Sensor Systems (Sensys 2020), Nov 2020 **(Best Poster Award Runner-up)**.

Angel Rodriguez, Sara Rampazzi and Kevin Fu, “**IoT Two Factor Neurometric Authentication System using Wearable EEG**”. In the Poster Session of the IEEE Workshop on the Internet of Safe Things (SafeThings 2019), May 2019.

Patents

Sara Rampazzi, Giovanni Danese, Lucia Fornasari, Francesco Leporati, Franco Marabelli, Nelson Nazzicari, Andrea Valsesia “**Detection device of molecular compounds based on Surface Plasmon Resonance**”. European patent ITMI20131345 (A1) — 2015-02-07. Priority 2013. Published 2015.

Selected Invited talks lectures and seminars

“Cyber-physical system security: Exploiting the physics of sensors to undermine AI-based decisions”, Invited webinar, Hardware.io - Hardware Security Conference and Training, 02/14/2022

“Sensor Security”, Sara Rampazzi, Invited Keynote at 15th IEEE Workshop on Offensive Technologies (WOOT '21), 27/05/2021

“Autonomous Vehicle Security”, Invited talk, Lansing Information Systems Security Association (ISSA) Meeting, 12/17/2020

“Wirelessly sensor technology for verifiable decontamination of N95 masks”, COVID-19 Research Lightning Round Webinar, COVID Information Commons, 10/16/2020

“Light Commands: Hacking Voice Assistants with Lasers”, talk, BlackHat Europe 2020, 12/10/2020

“Cybersecurity In The Internet Of Medical Things Era: Research And Challenges”, Invited Seminar, Archimedes 2020 Leadership Workshop Webinar Series, 06/03/2020

“Cybersecurity in Hospitals: comparing EU and US strategies” Seminar & discussion panel in second level postgraduate Master in Cyberlaw and Policies for Digital Innovation, University of Milan Bicocca, 12/19/2018

“Cybersecurity and Implantable Devices”. Invited talk in Women in Electrophysiology, Medical Education - Medtronic Accademy, 10/13/2018

“Sensor Security in Cyber-Physical Systems”, seminar for graduate students of the Ph.D. School of Electrical and Electronics Engineering and Computer Science, University of Pavia, 07/15/2018

Service to profession

Program Chair:

17th Workshop on Offensive Technologies (WOOT 2023)

2nd Annual Embedded System Workshop (EmSec 2020)

Student Funding Chair:

Network and Distributed System Security Symposium (NDSS 2024)

Poster/Demo Chair:

Poster Chair for USENIX Security Symposium 2022

Poster and Demo Chair for the VehicleSec Symposium 2023

Session Chair:

ACM CCS 2020, USENIX 2021

Conferences PC Member:

- IEEE Workshop on the Internet of Safe Things (SafeThings) 2019, 2021
- USENIX Security Symposium (USENIX), 2021, 2022, 2023, 2024
- IEEE Security & Privacy 2023, 2024
- ACM Conference on Computer and Communications Security (CCS) 2020
- Workshop on Offensive Technologies (WOOT) 2020, 2021, 2022
- IEEE SecDev 2021
- DYnamic and Novel Advances in Machine Learning and Intelligent Cyber Security Workshop (DYNAMICS), 2020
- International Workshop on Automotive and Autonomous Vehicle Security (AutoSec) 2022
- VehicleSec Symposium 2023
- Workshop on CPS&IoT Security and Privacy (CPSIoTSec) 2022

N95Decon.org Consortium member (2020-2021):

Volunteer collective of scientists, with the goal of reviewing, publishing, and disseminating scientific information about N95 masks decontamination and reuse - <https://www.n95decon.org/>

Journal Peer Reviewer (<https://www.webofscience.com/wos/author/record/788841>):

PLOS ONE; ACM Transactions on Privacy and Security;
ACM Transactions on Computing for Healthcare; Science Magazine;
IEEE Security & Privacy Magazine, Sensors; ACM IEEE Transactions on Dependable and Secure Computing.

NSF SaTC Grant Proposal Review Panelist (2018, 2022)

Organization Committee member:

Euromicro SEAA 2014/ DSD 2014 Conference

Mentoring & Advising

Inclusion, Diversity, Equity and Access Committee Member

University of Florida, CISE Dept, 2021 - Present

Computer Engineering Undergraduate Advisor

University of Michigan, Winter 2019

Mentor of:

- Wiser – (Women In SEcurity Research) at University of Michigan (2018-2020)
- First Generation Engineering Program at University of Michigan (2018-2020)
- Society of Women Engineers Summer Camp mentor at University of Michigan (2018)

IEEE Student Branch Computer Science Area Advisor

IEEE Pavia Student Branch, Region 8, Italian section, University of Pavia, 2011-2014.

Technical Skills

PLs:	Matlab, C, Java
Design/Modelling/ Simulation tools:	Matlab-Simulink, COMSOL Multiphysics, StateFlow, IBM Rational Rhapsody.
Programming/ Validation/Testing tools:	IBM Rational Logiscope, GNURadio, QA System Cantata++, dSpace Target Link, ROS, MPLAB, MikroC for PIC and ARM

Languages

Italian	Native speaker
English	Fluent
Spanish	Scholastic