Abbas Acar, PhD

Postdoctoral Associate
Cyber-Physical Systems Security Lab (CSL)
Knight Foundation School of Computing and Information Sciences (KFSCIS)
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https://scholar.google.com/citations?user=-LVF4y0AAAAJ

Education

PhD
(2015-2020)
○ Florida International University (FIU), Miami, FL, USA
Major: Electrical and Computer Engineering

MSc
(2015-2019)
○ Florida International University (FIU), Miami, FL, USA
Major: Electrical Engineering

BSc
(2010-2015)
○ Middle East Technical University (METU), Ankara, Turkey
Major: Electrical and Electronics Engineering
Minor: Mathematics

Experience

Florida International University
(2020-Present)
○ **Postdoctoral Associate:**
- *1) Research:* Research novel projects in computer science and cybersecurity such as IoT/mobile/web security/privacy, AI/ML security, and blockchain/bitcoin security.
- *2) Mentoring:* Mentorship to 9+ graduate and 20+ undergraduate students.
- *3) Service:* Serving as a committee member and reviewer for top-tier security conferences/journals.
- *4) Writing:* Writing grant proposals and research articles.

Florida International University
(2015-2020)
○ **Research Assistant:** Worked on a wide range of cybersecurity projects such as biometric user authentication, IoT security/privacy, advanced threat intelligence, and secure data exchange methods.
○ **Teaching Assistant:** Handled class activities such as the design of the classes, being a substitute and grading the homework and exams for Internet of Things (IoT) and Network Security classes.

Publications

Journals

1. Nazli Tekin, **Abbas Acar**, Ahmet Aris, A. Selcuk Uluagac, and Vehbi Cagri Gungor. "Energy consumption of on-device machine learning models for IoT intrusion detection". Elsevier Internet of Things (IoT), 2023.
2. **Abbas Acar**, Shoukat Ali, Koray Karabina, Cengiz Kaygusuz, Hidayet Aksu, Kemal Akkaya, and A. Selcuk Uluagac. "A Lightweight Privacy-aware Continuous Authentication Protocol - PACA". ACM Transactions on Privacy and Security (TOPS), 2021.
3. **Abbas Acar**, Hidayet Aksu, Kemal Akkaya, and A. Selcuk Uluagac. "A Usable and Robust Continuous Authentication Framework using Wearables". IEEE Transactions on Mobile Computing (TMC), 2020.
4. **Abbas Acar**, Wenyi Liu, Raheem Bayeh, Kemal Akkaya, and Arif Selcuk Uluagac, "A privacy-preserving multifactor authentication system", Wiley Security and Privacy, 2019.
5. **Abbas Acar**, Hidayet Aksu, A. Selcuk Uluagac, and Mauro Conti, "A survey on homomorphic encryption schemes: Theory and implementation,". ACM Computing Surveys (CSUR), 2018.

Conferences

6. **[NDSS '24]** **Abbas Acar**, Guliz Seray Tuncay, Esteban Luques, Harun Oz, Ahmet Aris, and Selcuk Uluagac. "50 Shades of Support: A Device-Centric Analysis of Android Security Updates". Network and Distributed System Security Symposium (NDSS), 2024.

7. **[USENIX Security '23]** Harun Oz, Ahmet Aris, **Abbas Acar**, Guliz Seray Tuncay, Leonardo Babun, and Selcuk Uluagac. "RøB: Ransomware over Modern Web Browsers". In the 32nd USENIX Security Symposium, 2023.

8. **[IEEE ICC '23]** Javier Franco, **Abbas Acar**, Ahmet Aris, and Selcuk Uluagac. "Forensic Analysis of Cryptojacking in Host-based Docker Containers Using Honeypots". IEEE International Conference on Communications (ICC), 2023.

9. **[WiSec '22]** Shrenik Bhansali, Ahmet Aris, **Abbas Acar**, Harun Oz, and A. Selcuk Uluagac. 2022. "A First Look at Code Obfuscation for WebAssembly". The 15th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), 2022.

10. **[NDSS '22]** Ege Tekiner, **Abbas Acar**, and A. Selcuk Uluagac. "A Lightweight IoT Cryptojacking Detection Mechanism in Heterogeneous Smart Home Networks". Network and Distributed System Security Symposium (NDSS), 2022.

11. **[NDSS '22]** Leonardo Babun, Amit Kumar Sikder, **Abbas Acar**, and A. Selcuk Uluagac. "The Truth Shall Set Thee Free: Enabling Practical Forensic Capabilities in Smart Environments". Network and Distributed System Security Symposium (NDSS), 2022.

12. **[IEEE DAPPS '21]** Ege Tekiner, **Abbas Acar**, A. Selcuk Uluagac, Engin Kirda, and Ali Aydin Selcuk. "In-Browser Cryptomining for Good: An Untold Story". IEEE International Conference on Decentralized Applications and Infrastructures (DAPPS), 2021.

13. **[IEEE EuroS&P '21]** Ege Tekiner, **Abbas Acar**, A. Selcuk Uluagac, Engin Kirda, and Ali Aydin Selcuk. "SoK: Cryptojacking Malware". IEEE European Symposium on Security and Privacy (EuroS&P), 2021.

14. **[WiSec '20]** **Abbas Acar**, Hossein Fereidooni, Tigist Abera, Amit Kumar Sikder, Markus Miettinen, Hidayet Aksu, Mauro Conti, Ahmad-Reza Sadeghi, Selcuk Uluagac. "Peek-a-Boo: I see your smart home activities, even encrypted!". The 13th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), 2020.

15. **[WiSec '20]** Amit Kumar Sikder, Leonardo Babun, Z. Berkay Celik, **Abbas Acar**, Hidayet Aksu, Patrick McDaniel, Engin Kirda, and A. Selcuk Uluagac. "Kratos: Multi-User Multi-Device-Aware Access Control System for the Smart Home". The 13th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), 2020.

16. **[ISC '19]** **Abbas Acar**, Long Lu, Engin Kirda, and A. Selcuk Uluagac, "An Analysis of Malware Trends in Enterprise Networks". The 22nd Information Security Conference (ISC), 2019.

17. **[CODASPY '19]** Z. Berkay Celik, **Abbas Acar**, Hidayet Aksu, Ryan Sheatsley, Patrick McDaniel, and A. Selcuk Uluagac, Curie: Policy-based Secure Data Exchange. ACM Conference on Data and Application Security and Privacy (CODASPY), 2019.

18. **[IEEE SPW '18]** **Abbas Acar**, Hidayet Aksu, Kemal Akkaya, and A. Selcuk Uluagac. WACA: Wearable-Assisted Continuous Authentication. In 39th IEEE Symposium on Security and Privacy Workshop (IEEE SPW), 2018.

19. **[IEEE CCWC '18]** Amit Kumar Sikder, **Abbas Acar**, Hidayet Aksu, Selcuk Uluagac, Kemal Akkaya, and Mauro Conti. IoT-enabled smart lighting systems for smart cities. In 2018 IEEE 8th Annual Computing and Communication Workshop and Conference (CCWC) (IEEE CCWC 2018), Las Vegas, USA, January 2018.

20. **[IEEE PAC '17]** **Abbas Acar**, Z. Berkay Celik, Hidayet Aksu, A. Selcuk Uluagac and Patrick McDaniel. "Achieving Secure and Differentially Private Computations in Multiparty Settings." IEEE Symposium on Privacy-Aware Computing (PAC). IEEE, 2017.

Invention Disclosures

21. **A. Acar**, H. Aksu, K. Akkaya, and S. A. Uluagac, "Method for continuous user authentication with wearables," Sep. 11 2018, US Patent App. 15/674,133.

Service

Program Committee
- USENIX Security Symposium: 2024
- IEEE Symposium on Security and Privacy (S&P): 2024
- ACM Conference on Computer and Communications Security (CCS): 2023 (Top-reviewer award)

Web Chair
- ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec): 2019

Reviwer Role
1. ACM Computing Surveys (CSUR)
2. Elsevier Computer Networks (COMNET)
3. Future Generation Computer Systems (FGCS)
4. IEEE Access
5. IEEE Communications Surveys and Tutorials (COMST)
6. IEEE Transactions on Dependable and Secure Computing (TDSC)
7. IEEE Transactions on Information Forensics & Security (TIFS)
8. IEEE Transactions on Mobile Computing (TMC)
9. IEEE Transactions on Network and Service Management (TNSM)
10. IET Networks
11. Journal of Communications Software and Systems (JCOMSS)
12. Journal of Database Management (JDM)
13. Journal of Network and Computer Applications (JNCA)
14. Journal of Cybersecurity
15. MDPI Electronics
16. MDPI Sensors
17. Wiley Security and Privacy
18. IEEE Consumer Communications & Networking Conference (CCNC)
19. IEEE International Conference on Communications (ICC)
20. International Performance Computing and Communications Conference (IPCCC)
21. IEEE International Smart Cities Conference (ISC2)
22. IEEE Conference on Local Computer Networks (LCN)
23. IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
24. IEEE Vehicular Technology Conference (VTC)
25. IEEE Wireless Communications and Networking Conference (WCNC)

Mentoring
- Mentored the following students:
  1. Harun Oz (FIU, PhD, 2021-present)
  2. Yassine Mekdad (FIU, PhD, 2021-present)
  3. Derin Cayir (FIU, PhD, 2023-present)
  4. Haiyun Deng (FIU, PhD, 2023-present)
  5. Maryna Veksler (FIU, PhD, 2023-present)
  6. Carlo Mazzocca (University of Bologna, Visiting PhD, 2022-present)
  7. Andrea Martinez (FIU, MSc, 2022-present)
  8. Esteban Luquez (FIU, MSc, 2022-present)

7. Javier Franco (FIU, MSc, 2022-2023)
8. Ege Tekiner (FIU, MSc, 2019-2021)
9. Eleonora Mancini (Univresity of Padua, Visiting MSc, 2022-2023)
10. Naor Vidal (FIU, Undergraduate, 2022-present)
11. Sevval Erkurt (FIU, Undergraduate, 2023-present)
12. Alejandro Perez (FIU, Undergraduate, 2022-2023)
13. Shrenik Banshali (Georgia Institute of Technology, REU program, 2021 summer)
14. William Jang, (Amherst College, REU program, 2018 summer)
15. Leandro Lopez Leon, (Carnegie Mellon University, REU program, 2018 summer)
16. Nadezhda Bzhilyanskaya, (University of Maryland, REU program, 2017 summer)
17. Chance Miller (FIU, REU program, 2023 summer)
18. Kimberly Opara (Kean University, REU program, 2023 summer)
19. Claire MacDonald (The University of Texas at El Paso, REU program, 2022 summer)
20. Abel Mateo (FIU, REU program, 2022 summer)
21. Catherine Betancourt (MDC Summer Research, 2023 summer)
22. Jacob Mendelson (MDC Summer Research, 2023 summer)
23. Jason Jabech (MDC Summer Research, 2023 summer)
24. Marco Pena (MDC Summer Research, 2023 summer)
25. Starlin Jimenez (MDC Summer Research, 2023 summer)
26. Analia Camarda, Microsoft IoT Lab Design Project
27. Ifiok Dan-Abia, Microsoft IoT Lab Design Project
28. Andy Carvajal, Microsoft IoT Lab Design Project
29. Paulina Acosta, Microsoft IoT Lab Design Project

Computer Skills

Languages	Python, C/C++, Solidity (basic), Rust (basic), Verilog (basic)
IDEs	VSCode, Jupyter, Xcode, Matlab, Android Studio/Wear, Xilinx ISE
Security Tools	WireShark, Nmap, JtR, Aircrack, OpenVPN, killerbee, Scapy, HackRF One
Reverse-engineering	IDA Pro, OllyDbg, Netcat, Procmon, ApateDNS
ML Tools	Pandas, SQLite, SciPy, Numpy
ML/DL Frameworks	Scikit-learn, Pytorch, Keras, Tensorflow
Forensics	Lime and Volatility
Blockchain	Ethereum in BigQuery, web3.py
Cryptography	NTL, HELib, SEAL
Web	Node.js, PHP, WebAssembly (Wasm), HTML, CSS, JSON
Virtualization	VirtualBox, VMware, Docker

Professional Activities

Visiting Researcher
- Summer research visit to the group led by Prof. Engin Kirda at Northeastern University, MA, USA. (May-Aug 2018)
- Summer research visit to the SPRITZ group led by Prof. Mauro Conti at the University of Padua, Italy. (May-Aug 2017)

Demo
- "WACA: Wearable-Assisted Continuous Authentication", eMerge Americas 2018 and 2019, Miami Beach, Florida, April 2018 and 2019.
- "WACA: Wearable-Assisted Continuous Authentication", The Next Horizon campaign, Florida International University.

Talks
- "Security & Privacy of Unpatched Android Devices and Emerging Web Applications", presented remotely to Google as part of the Google ASPIRE project, 2022.
- "Mind your own cryptocurrency!", Workshop on Learning from Authoritative Security Experiment Results (LASER), 2022.
- "WACA: Wearable-Assisted Continuous Authentication", "WACA: Wearable-Assisted Continuous Authentication", 39th IEEE Symposium on Security and Privacy Workshop, 2018.
- "Curie: Policy-based secure data exchange", ACM Conference on Data and Application Security and Privacy (CODASPY), 2019.
- **Abbas Acar**, Amit Kumar Sikder, Leonardo Babun, and A. S. Uluagac, "Hacking Smart Devices: Live Demonstration", Technical Presentation at U.S. Chamber of Commerce Cybersecurity Conference, Florida International University, Miami, FL, December 2017.

Media Coverage
- "Professor Selcuk Uluagac's research team wins Android Security and Privacy Research (ASPIRE) Award", FIU News, December 10, 2021. `https://news.fiu.edu/2021/selcuk-uluagac-wins-coveted-google-aspire-award`
- "Security flaws found in popular smart home devices", PBS NEWS HOUR, Jamie Leventhal, November 6, 2019. `https://www.pbs.org/newshour/science/security-flaws-found-in-popular-smart-home-devices`
- "Encryption doesn't stop him or her or you... from working out what Thing 1 is up to", The Register, Richard Chirgwin, August 10, 2018. `https://www.theregister.com/2018/08/10/internet_of_things_encryption_snooping/`
- "Dangers of Unsecured Surveillance Cameras", NBC 6 News, Miami, August 2016. `https://www.nbcmiami.com/news/local/Dangers-of-UnsecuredSurveillance-Cameras-390530322.html`.
- Abbas Acar, Amit Kumar Sikder, Leonardo Babun, and A. S. Uluagac, "Experts talk cyberattacks on business, lead live 'hack' " FIU News, 2017. `https://newsarchives.fiu.edu/2017/12/cybersecurity-experts-talk-cyberattacks-on-business-lead-live-hack`.
- "Guard Your Gadget", WSVN 7 News, Miami, November 2016. url: `https://wsvn.com/news/special-reports/guard-your-gadgets/`.

Awards and Achievements

- *High Honor* and *Honor* degrees at Middle East Technical University, Ankara, Turkey.
- Ranked 2000 among 1.5 million students in the University Entrance Exam in Turkey.
- Nominated for Mathematics Science Olympiads in High School in Turkey.

Languages

Turkish	**Native**	*Mother Tongue*
English	**Fluent**	*Daily practice, all work performed in English*

References

Available upon request.

Last Update: December 2, 2023