

Maryna Veksler

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EDUCATION

Doctor of Philosophy in Computer Science Florida International University, Miami, FL <i>Dissertation title:</i> Standardizing AI for Digital Forensics: Bridging Theory and Real-World Forensic Needs <i>Advisors:</i> Kemal Akkaya, Selcuk Uluagac GPA: 3.95/4.0	Aug 2025
Masters of Computer Science Florida International University, Miami, FL GPA: 3.95/4.0	July 2024
Bachelor of Computer Engineering Florida International University, Miami, FL GPA: 3.59/4.0	Dec 2019

RESEARCH INTERESTS

- AI for Digital Forensics: standardization of AI-driven forensic methods, ethical considerations, and the use of AI for both detecting and concealing generative content
- Trustworthy AI: addressing attacks on AI and LLM models, privacy leakage risks, and broader implications of adversarial manipulations
- Explainable AI: advancing methods that enhance transparency and interpretability to build user trust and ensure reliable adoption of AI systems
- AI-based Cybersecurity: Leveraging LLMs and DL for tasks such as automated data labeling, intrusion detection in networks, and securing drone communications

RESEARCH EXPERIENCE

Assistant Professor <i>Virginia Commonwealth University, Richmond, VA</i> • Establishing a research program in trustworthy and secure AI, cybersecurity, and CPS • Teaching undergraduate and graduate courses in computer science • Advising graduate and undergraduate researchers • Pursuing externally funded research and interdisciplinary collaborations	Aug 2026 - Present
Postdoctoral Fellow <i>Virginia Commonwealth University, Richmond, VA</i> • Contributing to developing, revising, and preparing research proposals in AI and communication security areas • Mentoring PhD students on experimental design, analysis, and methodological development • Conducting research on AI applications in digital forensics, network, and drone security	Aug 2025-Aug 2026
Graduate Research Assistant <i>Florida International University, Miami, FL</i> • Collaborated with faculty to develop and submit 3 research proposals, resulting in securing funding for innovative research in digital forensics and IoT communication security • Developed a novel AI-based method for video source camera identification, resulting in publications at IEEE MIPR and IEEE Multimedia Magazine • Conducted a survey/interview study with 28 digital forensic experts; proposed a standardization framework for trustworthy integration of AI in digital forensics (under review at Forensic Science Intl.: Digital Investigations)	Aug 2021-Aug 2025

- Developed AI-powered forensic triage tool for mobile cryptowallet apps, leading to a US patent and publications at EAI ICDF2C and Discovery Computing Journal
- Designed SHAP-based explainability method to increase interpretability and trustworthiness of AI in digital forensics
- Investigated drone communication protocol vulnerabilities to covert channel attacks, resulting in publication at ACM AsiaCCS
- Researched security of drone sensor system against generative adversarial network (GAN)-based attacks, with results published at ACM SIGAPP and follow-up manuscript under review
- Developed ML approach for IoT device identity detection via communication patterns, published at IEEE MILCOM
- Designed a testbed for post-quantum and TLS integration in 5G communications, published at IEEE IPCCC
- Analyzed cookie privacy compliance across 1K+ websites spanning 38 countries

RESEARCH GRANT EXPERIENCE

Contributions to Prior Funded Research

Triage Tool for Cryptocurrency Artifact Detection on Phones – Phase II Aug 2021-Aug 2024

Principal Investigator: Kemal Akkaya, PhD

NSF Award: \$35,000

Role: Co-author contributor.

Understanding Covert and Sensory Side Channels in Drone Communications in Smart Settings for Anticipatory Intelligence June 2022 - June 2023

Principal Investigator: Selcuk Uluagac, PhD

Award Fund: \$100,000

Role: Co-author contributor.

Machine Learning-based Digital Forensics Analysis Framework of PDF Files Spring 2022

Principal Investigator: Kemal Akkaya, PhD

National Institute of Justice

Award Fund: \$600,000

Role: Co-author contributor.

Contributions to Submitted Grants

Collaborative Research: Peer-Mentored Validation of AI-Generated Code in Undergraduate Computing Submitted June 2025

Principal Investigators: Kostadin Damevski

National Science Foundation - IUSE

Role: Co-PI.

Verified and Validated Heterogeneous Firmware Variants for Pre-Deployment Cyber Resilience in Unmanned System Fleets Submitted May 2025

Principal Investigators: Maryna Veksler

DEVCOM ARL-BAA-0121

Role: PI.

SATURN: Toward Secure and Autonomous Integration of UAV, Satellite, and Terrestrial Networks Submitted Sept 2025

Principal Investigators: Eyuphan Bulut, Kostadin Damevski

National Science Foundation - VINES

Role: Co-author contributor.

SaTC 2.0: RES: Advancing Security and Privacy for Emerging WiFi Sensing Submitted Sept 2025

Systems

Principal Investigators: Eyuphan Bulut

National Science Foundation - SaTC

Role: Co-author contributor.

PUBLICATIONS

Referred Conference Papers (Proceedings)

1. Hanna, Yacoub, **Maryna Veksler**, and Kemal Akkaya. "PQ-CKEM: Efficient Quantum-resistant Group Key Creation for Large-Scale LEO Satellite Networks." In 2026 IEEE 32st International Symposium on Local and Metropolitan Area Networks (LANMAN), **2026 - Best Paper Award**
2. Asif, Muneeba, **Maryna Veksler**, Devrim Aras, Kemal Akkaya, and Mohammad Ashiqur Rahman. "SLEIGHT: Real-time Closed-Loop Attack Analytics Framework for Holistic Intrusion Detection Systems in Unmanned Aerial Vehicles." 4th USENIX Symposium on Vehicle Security and Privacy (VehicleSec'26), **2026**.
3. Paudel, Manish, **Maryna Veksler** and Kemal Akkaya. "Policy Externalization in 5G-PKI: Enabling Scalable and Quantum-Ready IoT." In Proceedings of the Workshop on Migration and Agility in Cryptographic Systems (MAGICS'26), CCIS, **2026**.
4. **Veksler, Maryna**, Kemal Akkaya, and Selcuk Uluagac. "Digital Forensics AI You Can Explain: A Case Study of Video Source Camera Identification." In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (pp. 7030-7039) **2026**
5. Paudel, Manish, **Maryna Veksler** and Kemal Akkaya. "Lightweight Identity-Based Re-Authentication for Supporting Post-Quantum Security in 5G." In Proceedings of Workshop on Security and Privacy of Next-Generation Networks (FutureG'26), NDSS, **2026**.
6. **Veksler, Maryna**, Kemal Akkaya, and Selcuk Uluagac. "Catch me if you can: Covert information leakage from drones using mavlink protocol." In Proceedings of the 19th ACM Asia Conference on Computer and Communications Security, pp. 902-914, **2024**.
7. Hanna, Yacoub, Diana Pineda, **Maryna Veksler**, Manish Paudel, Kemal Akkaya, Mila Anastasova, and Reza Azarderakhsh. "Integrating post-quantum tls into the control plane of 5g networks." In IEEE International Performance, Computing, and Communications Conference (IPCCC), pp. 1-8, **2024**.
8. Uludag, Mehmed Kerem, **Maryna Veksler**, Yasin Yilmaz, and Kemal Akkaya. "Deceptive Skies: Leveraging GANs for Drone Sensor Data Falsification." In Proceedings of the 39th ACM/SIGAPP Symposium on Applied Computing, pp. 1606-1613, **2024**.
9. **Veksler, Maryna**, David Langus Rodríguez, Ahmet Aris, Kemal Akkaya, and A. Selcuk Uluagac. "LoFin: LoRa-based UAV Fingerprinting Framework." In IEEE Military Communications Conference (MILCOM), pp. 980-985, **2022**.
10. **Veksler, Maryna**, Clara Caspard, and Kemal Akkaya. "Image-to-Image Translation Generative Adversarial Networks for Video Source Camera Falsification." In International Conference on Digital Forensics and Cyber Crime, pp. 3-18. Cham: Springer Nature Switzerland, **2022**.
11. Bhattarai, Abhishek, **Maryna Veksler**, Hadi Sahin, Ahmet Kurt, and Kemal Akkaya. "Crypto wallet artifact detection on android devices using advanced machine learning techniques." In International Conference on Digital Forensics and Cyber Crime, pp. 111-132. Cham: Springer Nature Switzerland, **2022**.
12. **Veksler, Maryna**, Ramazan Aygun, Kemal Akkaya, and Sitharama Iyengar. "Video origin camera identification using ensemble CNNs of positional patches." In IEEE 5th International Conference on Multimedia Information Processing and Retrieval (MIPR), pp. 41-46, **2022**.
13. **Veksler, Maryna**, Kemal Akkaya, and Selcuk Uluagac. "Same Site, Different Reality: Measuring How Location and Privacy Framework Shape Cookie Invasiveness and Consent Behavior." *Under review in CCS 2026*.

Peer-reviewed Journal Articles

1. **Veksler, Maryna**, Kemal Akkaya, and Selcuk Uluagac. "Practitioner-Driven Framework for AI Adoption in Digital Forensics" *Forensic Science International: Digital Investigations*, vol. 55, **2025**.

2. Bhattarai, Abhishek, Abdulhadi Sahin, **Maryna Veksler**, Ahmet Kurt, Devrim Aras, Carlos Imery, and Kemal Akkaya. "Cryptocurrency forensics automation: a deep learning and NLP-based approach for mobile platforms." *Discover Computing* 28, no. 1, **2025**.
3. **Veksler, Maryna**, Ramazan S. Aygun, Kemal Akkaya, and Sitharama S. Iyengar. "A Convolutional Neural Network Ensemble for Video Source Camera Forensics." *IEEE MultiMedia* 31, no. 2, **2024**.
4. Paudel, Manish, Yacoub Hanna, Diana Pineda, **Maryna Veksler**, Kemal Akkaya, Mila Anastasova, and Reza Azarderakhsh. "Integrating post-quantum tls into the control plane of 5g networks." *Under revision in Elsevier IoT Journal*.

Book Chapters

1. **Veksler, Maryna**, and Kemal Akkaya. "Executive Summary: Digital Forensics AI: Towards a Framework for Practical Adoption." *Artificial Intelligence Driven Forensics*. Cham: Springer Nature Switzerland, **2026**.
2. **Veksler, Maryna**, and Kemal Akkaya. "Good or Evil: generative adversarial networks in digital forensics." In *Adversarial Multimedia Forensics*, pp. 55-91. Cham: Springer Nature Switzerland, **2023**.

PATENTS

Bhattarai, A., **Veksler, M.**, Kurt, A., Sahin, A. and Akkaya, K.. Systems and methods for detecting cryptocurrency wallet artifacts in a file system. U.S. #11,755,958, filed May 4, 2023 and issued Sept. 12, 2023.

SOFTWARE DEVELOPMENT & INDUSTRY EXPERIENCE

Full Stack Mobile Developer

Mar 2020 – Jul 2021

General Motors, Detroit, MI

- Implemented reusable elements for UI/UX and backend JavaScript components, reducing feature development time by 50%, leading to quicker iterations and increased team productivity
- Designed a new CI/CD pipeline with Jenkins, automating the distribution process and cutting deployment time by 60%, allowing for faster and more reliable software releases
- Collaborated in pair programming and adopted test-driven development, enhancing code quality, reducing bugs, and ensuring faster deployment of features with fewer post-release issues
- Led security scans using Fortify and BlackDuck, identifying and mitigating 50+ security vulnerabilities, ensuring secure code distribution and compliance with industry standards
- Collaborated with QA and leveraged Firebase logs to resolve critical application bugs, improving overall app stability and user experience, contributing to enhanced user retention and satisfaction

Software Engineering Intern

May 2019 – Jul 2019

PayCargo LLC, Miami, FL

- Enhanced website functionality and provided continuous support during the migration to a Node.js architecture, ensuring minimal downtime and seamless transition for users
- Developed and launched a dynamic, secure transaction feature, enabling more efficient processing of financial transactions
- Designed and implemented new database structure in SQL, optimizing data storage and retrieval processes, leading to improved scalability

TEACHING EXPERIENCE

Teaching Assistant, Florida International University

Spring 2023

Course: Circuit Analysis

Responsibilities: Developed and taught practical labs. Graded assignments and projects, providing feedback and material reviews.

Guest Lecturer

Fall 2022

Course: Computing and Network Security, Advanced IoT Communications and Networking

Responsibilities: Invited to present ongoing work to students. Developed and

delivered 50-minute lectures.

MENTORING EXPERIENCE

Mentor for David Langus Rodriguez. FIU undergraduate student. Fall 2021-Spring 2022
Current status: Technical Staff at MIT Lincoln Laboratory; PhD student at Cornell University

Mentor for Mehmed Kerem Uludag. UMich student on REU rotation. Summer 2023
Current status: Senior AI/ML Engineer at Ford

Mentor for Joshua Estrada. Cal Poly Pomona student on REU rotation. Summer 2024
Current status: Full Stack Engineer at PARES (YC S25)

Assistant Coach for FIU Women's Tennis Team. Fall 2021 - Spring 2025
Responsibilities: Mentored and coached student-athletes to help them achieve success in both their academic and athletic commitments

SERVICE & PROF. ACTIVITIES

TPC Membership

- Served on program committee of the 27th Information Security Conference (ISC)
- Served on program committee of the 1st International Workshop on Secure, Accountable, and Verifiable Machine Learning (SAFE-ML 2025)
- Served on program committee of the 35th USENIX Security Symposium

Panel Service

- NSF Spring 2026

Manuscript Reviewer

- Elsevier Ad Hoc Networks
- IEEE Transactions on Mobile Computing
- Forensic Science International: Digital Investigation
- Science & Justice Journal
- IEEE Transactions on Vehicular Technology
- Forensic Science International
- Computer Networks
- BuildSEC'24 Building a Secure & Empowered Cyberspace Conference
- GLSVLSI '23: Great Lakes Symposium on VLSI 2023

Community Service

- Volunteered at the 2024 IEEE Network Operations and Management Symposium (NOMS)

POSTERS & PRESENTATIONS

Oral Presentations

1. **Veksler, M.**, Akkaya, K., Uluagac, S. "Practitioner-Driven Framework for AI Adoption in Digital Forensics." 2025 Global Forensic Alliance Meeting.
2. **Veksler, M.**, Langus, D.R., Aris, A., Akkaya, K., Uluagac, S. "LoFin: LoRa-based UAV Fingerprinting Framework." MILCOM 2022 Conference
3. Bhattarai, A., **Veksler, M.**, Sahin, H., Kurt, A., Akkaya, K. "Crypto Wallet Artifact Detection on Android Devices Using Advanced Machine Learning Techniques." 2022 EAI ICDF2C Conference
4. **Veksler, M.**, Caspard, C., Akkaya, K. "Image-to-Image Translation Generative Adversarial Networks for Video Source Camera Falsification." 2022 EAI ICDF2C Conference
5. **Veksler, M.**, Aygun R., Akkaya, K., Iengar, S. "Video origin camera identification using ensemble CNNs of positional patches." 2022 IEEE MIPR Conference

Poster Presentations

1. **Veksler, Maryna**, and Akkaya, K. "Every Fine-Tune Leaves a Mark: Measuring Behavioral Drift in Foundation Models." 2026 USENIX Security Symposium
2. **Veksler, Maryna**, Akkaya, K., Uluagac, S. "Digital Forensics AI You Can Explain: A Case Study of Video Source Camera Identification." 2026 WACV Conference
3. **Veksler, M.**, Akkaya, K., Uluagac, S. "Practitioner-Driven Framework for AI Adoption in Digital Forensics." 2025 VASEM Annual Summit.
4. Uludag, M.K., **Veksler, M.**, Yilmaz, Y., Akkaya, K. "Deceptive Skies: Leveraging GANs for Drone Sensor Data Falsification." 2023 FIU KFSCIS "Tech Summit."
5. **Veksler, M.**, Aygun R., Akkaya, K., Iengar, S. "Using CNN Ensemble network based on positional patches improves camera-specific feature generalization across video frames increasing accuracy for video source camera identification." 2023 RSA Conference
6. **Veksler, M.**, Langus, D.R., Aris, A., Akkaya, K., Uluagac, S. "LoFin: LoRa-based UAV Fingerprinting Framework." MILCOM 2022 Conference

HONORS & AWARDS

Best Poster Award , Florida International University	2023
RSAC Security Scholar , RSA Conference	2023
Full Athletic Scholarship , Florida International University	2015-2019

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

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- Member, IEEE
 - Member, ACM
 - Full Member, Sigma Xi

SKILLS

Programming Languages: Python, ReactNative, JavaScript, TypeScript, Swift, Ruby, C, C++
Machine Learning: TensorFlow, Keras, scikit-learn, Jupiter Notebook
Data Science/Analysis: Numpy, Pandas, SQL, Matplotlib
Software Tools: Git, OpenCV, MATLAB, Selenium, Qualtrics, Fortify
Forensics and Security Tools: Wireshark, Cellebrite, ProDiscovery, FTKImager, Autopsy
DevOps & CI/CD: Jenkins, CI/CD pipelines, Bitbucket, JFrog Artifactory
Languages: English (Fluent), Russian (Native Speaker), Ukrainian (Native Speaker)

REFERENCES

Selcuk Uluagac

National Science Foundation SaTC Program Director
Eminent Scholar Chaired Professor
Director, Cyber-Physical Systems Security Lab (CSL)
Knight Foundation School of Computing and Information Sciences
Electrical and Computer Engineering Department (Courtesy)
Florida International University
Miami, FL 33199

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Ramazan Aygun

Director, Center of Research Computing
Professor, Computer Science and School of Data Science and Analytics
Trusted CI Fellow
College of Computing and Software Engineering
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Marietta, GA 30060

Relationship: Collaborator

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Alexander Perez-Pons

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Electrical and Computer Engineering Department
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Relationship: Professor; PhD Committee Member

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Abbas Acar

Senior Research Scientist
Harbor Labs

Relationship: Collaborator

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