Wassila Lalouani

Towson Univeristy
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RESEARCH INTERESTS	Telehealth System, Cyber physical system security, Intelligent AI Attacks, Communication Privacy, Machine Learning for Communication, and distributed system.

ACADEMIC BACKGROUND

University of Maryland Baltimore County, Maryland, USA
Ph.D. in Computer Science (GPA: 4.0/4.0)   2022
- Advisor: Professor Mohamed Younis.
- Dissertation title: AI cyber threat in cyber physical systems.

University of Science and Technology Houari Boumediene, Algeria
Ph.D. in Computer Science (GPA: 4.0/4.0)   2018
- Advisor: Professor Nadjib Badache.
- Dissertation title: Data fusion in Wireless Sensor Networks.

University of Science and Technology Houari Boumediene, Algeria
M.Sc. Computer Science (GPA: 4.0/4.0)   June 2009
- Advisor: Professor Nadjib Badache
- Thesis: Coordination in Wireless Sensors and actuators network.

University of Science and Technology Houari Boumediene, Algeria
B.Sc. Computer Science   Oct 2006
- Advisor: Professor Nadjib Badache
- Thesis: Mitigation of frequent disconnection in Mobile adhoc network.

EMPLOYMENT HISTORY

Towson University , Maryland, USA
Assistant Professor   Aug 2022 - Present

University of Maryland Baltimore County, Maryland, USA
Research Assistant with Professor Mohamed Younis   Aug 2019 - Aug 2022
University of Maryland Baltimore County, Maryland, USA
Teaching Assistant   Jan 2019 - June2019
University of Maryland Baltimore County, Maryland, USA
Research Assistant with Professor Mohamed Younis   Aug 2018 -Dec 2018

Higher Institution Of Computer Science (ESI), Algiers, Algeria.
Lecturerr   Fev 2011 - June 2018

Internet Provider (EEPAD SPA), Algiers, Algeria.
Senior Engineer   Nov 2008 - Sep 2011

National Petroleum Company (NAFTAL SPA), Algiers, Algeria.
Security and Network administrator Engineer   Jan. 2008 - Oct.2008

SPECIAL
ACHIEVEMENTS

Awards
- *Best Student Award*, for five years of bachelor degree, University of Science and Technology Houari Boumediene, 2006.

Featured Publication
- Lloyd E. Emokpae, Wassila Lalouani, Mohamed Younis and Roland N.Emokpae, Jr.c, "Smart Multi-modal Telehealth IoT System for COVID-19 Pa-tients", IEEE Pervasive Computing Journal,2021.

Invited Talks
- "Effective handling of spreading events using wireless sensor and actuator networks.", USTHB, LSI days, Fev 2015.
- Optimized repair of a partitioned network topology,UMBC, WSN course, 2018.

Professional Activities
- Technical Program Committee Member for– IEEE IWCM(2019-2020) and IEEE WiMob 2020, IEEE WiMob 2021, IEEE ICC 2022.
- Reviewer for Journals – Computer Network Journal(2017), IEEE System (2021), Arabian Journal(2019), IEEE Transactions on Industrial Informatics(2020) and Computer Communication (2020,2021) and IEEE open access (2020), IEEE internet of things (2021), and Pervasive and Mobile Computing (2021). Computer Communications 2022 2023, KSII Transactions on Internet and Information Systems 2022 2023, Journal of computer TPC eHPWAS'22 Journal of Network and Computer Applications

TEACHING

Towson University   **Aug 2022**
Assistant Professor

- Reverse Engineering and malware analysis : Spring 2023.
- Introduction to Computer Science : Spring 2023.
- Data Communication and Networking : Fall 2022.
- Introduction to Computer Science : Fall 2022.

University of Maryland Baltimore County   **Jan 2019**
Teaching Assistant

- Advanced Algorithms : Spring 2022.
- Operating System : Spring 2019.

Higher Institution Of Computer Science (ESI), Algeria   Fev 2011-June 2018
Lecturer

- Operating System I: Spring 2011, Spring 2012, Spring 2013, Spring 2014
- *Advanced Networking: Fall 2014.*
- *Operating System II: Fall 2011, Fall 2012, Fall 2013, Fall 2014*

University of Science and Technology Houari Boumediene
Teaching Assistant

- Operating System II   Jan 2006-May2006

STUDENT SUPERVISION

1. Reham Toumi, *Intrusion detection in Edge of IoT.* , PhD Student.

2. Ivan Omorogbe, , PhD Student.

3. Abdullahi Abdullahi, , PhD Student.

4. Yi Dang, *Mitigating Voltage Fingerprint Spoofing Attacks on CAN Bus*, M.Sc. project, 2021

5. Narasimha Enukonda, *LINEAR OPTO-ACOUSTIC COMMUNICATION AND IMPLEMENTATION*, M.Sc. project, 2021

6. Sai Chandana Medikonda, *Estimation of Distance between Mobile phones using Bluetooth RSSI*,M.Sc. project, 2020.

7. Danila Frolov, *Classification of Wireless Network Protocols and Physical Identification of Wireless Sensor Nodes in 2.4GHz Spectrum*, M.Sc. project, 2019

8. Sanket Laxman Zade, *Collaborative Beamforming in Wireless Sensor Networks*, M.Sc. project, 2020

9. Peter Kowalski, *Researching Zigbee RF Signatures to Distinguish Nodes on a Wireless Sensor Network*,M.Sc. project, 2019

10. Betoul Alsabagh, *"Physical Layer Metrics for Analyzing Network Traffic in Wireless Sensor Networks"* , M.Sc. project, 2019

11. YAHIOUI Dahmane, *Boundary Detection in presence of continuous event in WSN*, M.Sc. thesis, 2017

12. FARS Samy Rafik, *Corrdination in Wireless Sensors and actuators network*, M.Sc. thesis, 2017

PATENTS

1. Lloyd E. Emokpae, Roland Emokpae Jr., Mohamed Younis , Wassila Lalouani ,Ulysse Worsfold, A WEARABLE MULTI-MODAL SYSTEM FOR REMOTE MONITORING OF PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE , filled 2022.

2. Wassila Lalouani, Mohamed Younis, Ian White-Gittensb, Roland N. Emokpae, Jr.c and Lloyd E. Emokpae, *Energy-Efficient Collection of Wearable Sensor Data through Predictive Sampling*, filed by GN, P2048EP00, Nov 2018

3. Lloyd E. Emokpae, Wassila Lalouani, Mohamed Younis and Roland N. Emokpae, Jr.c, *Smart Multi-modal Telehealth IoT System for COVID-19 Patients"*, *IEEE Pervasive Computing Journal*, filed by GN, P2048EP00, Nov 2018.

Publications   See also page.

1. Wassila Lalouani and Mohamed Younis, Collusion-resistant, Lightweight and Privacy-preserving Authentication Protocol for IoV, Accepted IEEE Consumer Communications Networking Conference CCNC, 2023.

2. Lalouani, W., Dang, Y. Younis, M. Mitigating voltage fingerprint spoofing attacks on the controller area network bus. Cluster Comput 26, 1447–1460 (2023).

3. Wassila Lalouani and Mohamed Younis, Dayuan Tan, Lightweight and Anonymity-preserving Secure Group Communication Mechanism for Cooperative Driving, Wireless and Optical Communications Conference (WOCC2023) Accepted.

4. Dayuan Tan, Mohamed Younis, Wassila Lalouani, Shuyao Fan Guozhi Song (2023) A novel pedestrian road crossing simulator for dynamic traffic light scheduling systems, Journal of Intelligent Transportation Systems

5. Wassila Lalouani, Mohamed Younis, Mohammad Ebrahimabadi, Naghmeh Karimi, Collusion-resistant PUF-based Distributed Device Authentication Protocol for Internet of Things, *Accepted IEEE GlobeCom Conference.*

6. Wassila Lalouani, Mohamed Younis, Roland N. Emokpae, Lloyd E. Emokpae, Enabling effective breathing sound analysis for automated diagnosis of lung diseases, Smart Health, Volume 26, 2022,100329, ISSN 2352-6483, 2022.100329.

7. Mohammad Ebrahimabadi, Mohamed Younis; Wassila Lalouani; Naghmeh Karimi, "SWeeT: Security Protocol for Wearables Embedded Devices' Data Transmission", Accepted IEEE Health2022.

8. M. Younis, W. Lalouani, N. Lasla, L. Emokpae and M. Abdallah, "Blockchain-Enabled and Data-Driven Smart Healthcare Solution for Secure and Privacy-Preserving Data Access," in IEEE Systems Journal, 2021.

9. Wassila Lalouani, Mohamed Younis, Mohammad Ebrahimabadi, Naghmeh Karimi, Countering Modeling Attacks in PUF-based IoT Security Solutions, in ACM Journal on Emerging Technologies in Computing Systems, 2022.

10. Wassila Lalouani, Mohamed Younis, Mohammad Ebrahimabadi, Naghmeh Karimi, Robust and Efficient Data Security Solution for Pervasive Data Sharing in IoT, *Accepted IEEE Consumer Communications Networking Conference (CCNC),* 2022.

11. Mohamed Younis, Wassila Lalouani, Uthman Baroudi, Countering radiometric signature exploitation using adversarial machine learning based protocol switching, *Computer Communication Journal*, 2021, 174, 109-121.

12. Wassila Lalouani, Mohamed Younis, Ian White-Gittensb, Roland N. Emokpae, Jr.c and Lloyd E. Emokpae, Energy-Efficient Collection of Wearable Sensor Data through Predictive Sampling, *Smart Health Journal, Volume 21,2021, 100208, ISSN 2352-6483.*

13. Wassila Lalouani and Mohamed Younis, Robust Distributed Intrusion Detection System for Edge of Things, *IEEE Globecom,* 2021.

14. Wassila Lalouani, Mohamed Younis, A Federated Learning Framework for Resource Constrained Fog Networks, *IEEE International Conference on Communications (ICC),*2022.

15. Lloyd E. Emokpae, Wassila Lalouani, Mohamed Younis and Roland N. Emokpae, Jr.c, "Smart Multimodal Telehealth-IoT System for COVID-19 Patients," in IEEE Pervasive Computing, vol. 20, no. 2, pp. 73-80, 1 April-June 2021.

16. Mohammad Ebrahimabadi, Mohamed Younis; Wassila Lalouani; Naghmeh Karimi, "A Novel Modeling-Attack Resilient Arbiter-PUF Design," 2021 34th International Conference on VLSI Design and 2021 20th International Conference on Embedded Systems (VLSID), 2021, pp. 123-128.

17. Mohammad Ebrahimabadi, Mohamed Younis; Wassila Lalouani; Naghmeh Karimi, An Attack Resilient PUF-based Authentication Mechanism for Distributed Systems, Accepted in IEEE International Conference on VLSI Design and 21th International Conference on Embedded Systems (VLSID), 2022. (To appear)

18. Mohammad Ebrahimabadi, Wassila Lalouani, Mohamed Younis; Naghmeh Karimi, "Countering PUF Modeling Attacks through Adversarial Machine Learning," 2021 IEEE Computer Society Annual Symposium on VLSI (ISVLSI), 2021, pp. 356-361.

19. Dayuan Tan, Mohamed Younis; Wassila Lalouani; Shuyao Fan; Guozhi Song, A Novel Pedestrian Road Crossing Simulator for Dynamic Traffic Light Scheduling Systems, *Submitted Intelligent Transportation Journal*,2021

20. Dayuan Tan, Mohamed Younis, Wassila Lalouani, Sookyoung Lee, Adaptive Traffic Lights Control System for Mixed Traffic of Connected Autonomous Vehicles (CAVs) and Human-Driven Vehicles (HVs) Accepted IEEE Smart World Congress Conference 2021.

21. Lloyd Emokpae; Roland N Emokpae, Jr.; Ese Bowry; Jaeed B Saif; Muntasir Mahmud; Wassila Lalouani; Mohamed Younis; Robert L Joyner, Jr., A Wearable Multi-Modal Acoustic System for Breathing Analysis, submitted to Journal of the Acoustical Society of America.

22. Wassila Lalouani and Mohamed Younis, "Machine Learning Enabled Secure Collection of Phasor Data in Smart Power Grid Networks," 2020 16th International Conference on Mobility, Sensing and Networking (MSN), 2020, pp. 546-553, doi: 10.1109/MSN50589.2020.00091.

23. Wassila Lalouani and Mohamed Younis, "Multi-observable Reputation Scoring System for Flagging Suspicious User Sessions," Computer Networks Journal , Volume 182, 2020,107474, ISSN 1389-1286.

24. Wassila Lalouani, Mohamed Younis, Danila Frolov, Uthman Baroudi "Adversarial Machine Learning based Protocol Switching Mechanism for Countering Radiometric Signature Exploitation," IEEE International Conference on Communications (ICC 2020), Dublin, Ireland, June 2020.

25. Mohamed Younis, Sookyoung Lee, Wassila Lalouani, Dayuan Tan, Sanket Gupte, "Connected and Autonomous Vehicles in Smart Cities" , CRC-Tayloramp;Francis, Boca Raton, Florida, USA 2020.

26. Wassila Lalouani, Mohamed Younis, Nadjib Badache, "Interconnecting isolated network segments through intermittent links", Journal of Network and Computer Applications, Volume 108, 2018, Pages 53-63, ISSN 1084-8045.

27. Wassila Lalouani, Mohamed F. Younis, Nadjib Badache : Optimized repair of a partitioned network topology. Computer Networks 128: 63-77 (2017).

28. Wassila Lalouani, Mohamed F. Younis, Mohamed El-Amine Chergui, Nadjib Badache: Load-Balanced and Energy-Efficient Coverage of Dispersed Events Using Mobile Sensor/Actuator Nodes. GLOBECOM 2015: 1-7.

29. Wassila Lalouani, Mohamed F. Younis, Miloud Bagaa, Nadjib Badache: Effective handling of spreading events using wireless sensor and actuator networks. IWCMC 2014: 476-482.

Work in progress
RESEARCH PROJECTS PARTICIPATION

1. **A Body Area Sensor Network for Improved Physical Therapy**

2. **Multi-observable Session Reputation Scoring System**,

3. **Secure Hardware-Based Device Authentication**

4. **Vehicular Networking for Intelligent and Autonomous Traffic Management**,

5. **Anomaly detection in Intelligent transportation systems**,

Proposals

1. Anomaly detection in intelligent transportation systems. funded by Faculty Development Research Committee at Towson University ($10,363.74)

2. Authentic research in Cyber Physical Systems.funded ($5,999)

3. Multimodal Anomaly detection in Medical Cyber-Physical Systems for Chronological Lung Diseases Monitoring, (Submitted to School of Emerging Technologies)

4. Immuno-oncologic phenotype and soluble cytokine signature for early detection and prevention of OSCC (Submitted to NIH)

5. A Wearable Multi-Modal System for Remote Monitoring of Patients with Chronic Obstructive Pulmonary Disease (Submitted to NIH)

6. A Wearable Body Area Sensor Network System for Improved Physical Therapy (Submitted to NIH)