

# EYAD TAQIEDDIN

Department of Network Engineering and Security  
Jordan University of Science and Technology  
P.O. Box 3030, Irbid, 22110 Jordan  
+962-2-7201000 ext. 22557 (Office)  
[eyadtaq@just.edu.jo](mailto:eyadtaq@just.edu.jo), [eyad.s.taquieddin@ieee.org](mailto:eyad.s.taquieddin@ieee.org)

## 1. Personal Information

### a. Education

- 2007 Ph.D. Missouri University of Science and Technology (MST), Rolla MO, USA.  
Department of Electrical and Computer Engineering.  
Dissertation Title: “*Energy-Aware and Secure Routing with Trust Levels for Wireless Ad Hoc and Sensor Networks.*”
- 2002 M.Sc. Missouri University of Science and Technology (MST), Rolla MO, USA.  
Department of Electrical and Computer Engineering.  
Thesis Title: “*Network Performance Comparison: Simulated and Actual Results.*”
- 1999 B.Sc. Jordan University of Science & Technology (JUST), Irbid, Jordan.  
Department of Electrical Engineering.

### b. Experience

- Sept. 2018 – present* Director,  
SHMAGH Security Operations Center, JUST
- Sept. 2016 – Sept. 2018* Chairman,  
Department of Network Engineering and Security, JUST
- Feb. 2015 - present* Associate Professor,  
Department of Network Engineering and Security, JUST
- June 2013 - Aug. 2013* Visiting Research Professor,  
&  
*June 2012 - Aug. 2012* Embedded Control Systems and Networking Laboratory  
Department of Electrical and Computer Engineering, MST
- Sept. 2009- Feb. 2015* Assistant Professor,  
Department of Network Engineering and Security, JUST
- Sep. 2007- Aug. 2009* Assistant Professor,  
Department of Computer Engineering, JUST
- June 2007 – Aug. 2007* Instructor,  
Department of Electrical and Computer Engineering, MST

<i>July 2004 – May 2007</i>	Research Assistant, Department of Electrical and Computer Engineering, MST
<i>Oct. 2003 – June 2004</i>	Part-time Lecturer, Department of Computer Engineering, JUST
<i>Jan. 2001 – May 2003</i>	Research Assistant, Department of Electrical and Computer Engineering, MST
<i>Jan. 2001 – May 2003</i>	Teaching Assistant, Department of Electrical and Computer Engineering, MST
<i>Oct. 1999 – Aug. 2000</i>	System Administrator, Department of Electrical Engineering, JUST

## 2. Research and Scholarly Activities

### a. Patents

- A.1 Ali Salour, Douglas Trimble, Jagannathan Sarangapani, **Eyad Taqieddin**, “Ultra-Lightweight Mutual Authentication Protocol with Substitution Operation”, US Patent No. 10,198,605, February, 2019.

### b. Refereed Journal Articles

- B.1 Hala Abu Dhailah, **Eyad Taqieddin**, Abdallah Alma'aitah, “An Enhanced and Resource-Aware RFID Multi-tag Grouping Protocol”, *Security and Communication Networks*, vol. 2019, no. 6962052, pp. 1 – 15, May 2019.
- B.2 Abdulmughni Hamzah, Mohammad Shurman, Omar Al-Jarrah, **Eyad Taqieddin**, “Energy-Efficient Fuzzy-Logic-Based Clustering Technique for Hierarchical Routing Protocols in Wireless Sensor Networks,” *Sensors*, vol. 19, no. 3, pp. 1 – 23, January 2019.
- B.3 **Eyad Taqieddin**, Hiba Al-Dahoud, Haifeng Niu, Jagannathan Sarangapani, “Tag Ownership Transfer in Radio Frequency Identification Systems A Survey of Existing Protocols and Open Challenges,” *IEEE Access*, vol. 6, no. 3, pp. 32155 – 32117, June 2018.
- B.4 **Eyad Taqieddin**, Hiba Al-Dahoud, Khaldoun Mhaidat, “Security Analysis and Improvement of Reconstruction Based Radio Frequency Identification Authentication Protocol,” *International Journal on Communications Antenna and Propagation*, vol. 8, no. 3, pp. 221 – 206, June 2018.
- B.5 **Eyad Taqieddin**, Fahed Awad, Hani Ahmad, “Location-Aware and Mobility-Based Performance Optimization for Wireless Sensor Networks,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, vol. 8, no. 4, pp. 37 – 59, December 2017.
- B.6 **Eyad Taqieddin**, “On the Improper Use of CRC for Cryptographic Purposes in RFID Mutual Authentication Protocols,” *International Journal of Communication Networks and Information Security*, vol. 9, no. 2, pp. 230 – 240, August 2017.

- B.7 Haifeng Niu, **Eyad Taqieddin**, Jagannathan Sarangapani, "EPC Gen2v2 RFID Standard Authentication and Ownership Management Protocol," *IEEE Transactions on Mobile Computing*, vol. 15, no. 1, pp. 137 – 149, January, 2016.
- B.8 Omar Banimelhem, **Eyad Taqieddin**, Moad Y. Mowafi, Fahed Awad, Feda' Al-Ma'aqbeh, "Fuzzy Logic-Based Cluster Heads Percentage Calculation for Improving the Performance of the LEACH Protocol," *International Journal of Fuzzy System Applications*, vol. 4, no. 4, pp. 100 – 118, October 2015.
- B.9 Raed Bani-Hani, Salah Harb, Khaldoon Mhaidat, **Eyad Taqieddin**, "High-Throughput and Area-Efficient FPGA Implementations of Data Encryption Standard (DES)," *Circuits and Systems*, vol. 5, no. 3, pp. 45 – 56, March 2014.
- B.10 **Eyad Taqieddin**, Fahed Awad, Sally Abdallah, "Transitive Location Verification Algorithm in Location-Based Routing for Wireless Sensor Networks," *Ad Hoc and Sensor Wireless Networks*, vol. 21, no. 4, pp. 237 – 257, March 2014.
- B.11 **Eyad Taqieddin**, Moad Mowafi, Fahed Awad, Omar Banimelhem, Hani Maher, "An Energy-Balanced Cluster-Based Protocol for Wireless Sensor Networks," *International Journal of Information Technology and Web Engineering*, vol. 8, no. 3, pp. 50 – 63, July, 2013.
- B.12 Fahed Awad, **Eyad Taqieddin**, Asmaa. Seyam, "Energy-Efficient and Coverage-Aware Clustering in Wireless Sensor Networks," *Wireless Engineering and Technology (WET)*, vol. 3, no. 3, pp. 142 – 151, July 2012.
- B.13 Moad Mowafi, Fahed Awad, **Eyad Taqieddin**, Omar Banimelhem, "A Practical Study of Jointly Exploiting Multiple Image Compression Techniques for Wireless Multimedia Sensor Networks," *Journal of Communications (JCM)*, vol. 7, no. 4, pp. 309-320, April 2012.
- B.14 Fahed Awad, Omar Banimelhem, **Eyad Taqieddin**, Raed Banihani, "Undergraduate Program in Network Engineering and Security – A Feasibility Study", *International Journal of Modern Education and Computer Science (IJMECS)*, vol. 4, no. 2, pp. 45-51, March 2012.
- B.15 Natheer Khasawneh, Stefan Conrad, Luay Fraiwan, **Eyad Taqieddin**, Basheer Khasawneh, "Combining Decision Trees Classifiers: A Case Study of Automatic Sleep Stage Scoring," *International Journal of Knowledge Engineering and Data Mining*, vol. 2, No. 1, pp. 60-75, January 2012.
- B.16 **Eyad Taqieddin**, Ann Miller, Jagannathan Sarangapani, "Survivability and Reliability Analysis of the Trusted Link State Protocol for Wireless Ad Hoc Networks," *International Journal of Wireless and Mobile Networks*, vol. 3, no. 2, pp. 77-89, April 2011.
- B.17 **Eyad. Taqieddin**, Jagannathan Sarangapani, Ann Miller, "Optimal Energy-Delay Routing Protocol with Trust Levels for Wireless Ad Hoc Networks," *International Journal of Network Security*, vol. 7, no. 2, pp. 207-217, September 2008.

### c. Articles in Refereed Symposia, Conferences, and Workshops

- C.1 Omar Banimelhem, Hiba Al-Dahoud, **Eyad Taqieddin**, Moad Mowafi, "Genetic-based Key Splitting Algorithm for the Two Layered Protection Scheme," *10<sup>th</sup> International Conference on Information and Communication Systems*, Irbid, Jordan, June 2019.
- C.2 Mohammad Shurman, **Eyad Taqieddin**, Omar Oudat, Raffi Al-Qurran, Abd Alrahman Al Nounou, "Performance Enhancement in 5G Cellular Networks Using Priorities in Network Slicing," *IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)*, pp. 822 – 826, Amman, Jordan, April 2019.

- C.3 Fida'a Al-Quran, Abdallah Alma'aitah, Moad Mowafi, **Eyad Taqieddin**, "Energy-Efficient and QoS-Aware Multi-Path Geographic Routing Protocol for WMSN," *IEEE Globecom Workshops*, pp. 1 – 6, Abu Dhabi, UAE, December 2018.
- C.4 **Eyad Taqieddin**, Hiba Al-Dahoud, Moad Mowafi, Omar Banimelhem, "An Enhanced EPC Gen2v2 RFID Standard Authentication and Ownership Management Protocol," *42<sup>nd</sup> IEEE Conference on Local Computer Networks (LCN)*, pp. 683-689, Singapore, October 2017.
- C.5 **Eyad Taqieddin**, Yarub A. Wahsheh, "IEFP: An Application Layer Protocol for Islamic Electronic Fatawa Management and Security," *12<sup>th</sup> International Conference on Innovations in Information Technology (IIT)*, pp. 1 – 5, Al-Ain, UAE, November 2016.
- C.6 Eyad Taqieddin, Ola Abu-Rjei, Khaldoon Mhaidat, Raed Bani-Hani, "Efficient FPGA Implementation of the RC4 Stream Cipher using Block RAM and Pipelining," *6<sup>th</sup> International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN 2015)*, pp. 8 – 15, Berlin, Germany, September 2015.
- C.7 Haifeng Niu, Jagannathan, Sarangapani, **Eyad Taqieddin**, "A Gen2v2 Compliant RFID Authentication and Ownership Management Protocol," *IEEE 39<sup>th</sup> Conference on Local Computer Networks (LCN)*, pp. 331-336, Edmonton, Canada, September 2014
- C.8 Fahed Awad, **Eyad Taqieddin**, Moad Mowafi, Omar Banimelhem, Amani Abu Qdais, "A Simulation Testbed to Jointly Exploit Multiple Image Compression Techniques for Wireless Multimedia Sensor Networks," *11<sup>th</sup> International Symposium on Wireless Communications Systems (ISWCS)*, pp. 905-911, Barcelona, Spain, August 2014.
- C.9 Omar Banimelhem, Moad Mowafi, **Eyad Taqieddin**, Fahed Awad, Manar Al Rawabdeh, "An Efficient Clustering Approach using Genetic Algorithm and Node Mobility in Wireless Sensor Networks," *11<sup>th</sup> International Symposium on Wireless Communications Systems (ISWCS)*, pp. 858-862, Barcelona, Spain, August 2014.
- C.10 Omar Banimelhem, **Eyad Taqieddin**, Feda' Al-Ma'aqbeh, "A New Approach for Target Coverage in Wireless Sensor Networks using Fuzzy Logic," *10<sup>th</sup> IEEE International Conference on Networking, Sensing and Control (ICNSC)*, pp. 837-842, Paris, France, April 2013.
- C.11 **Eyad Taqieddin**, Omar Banimelhem, Ibrahim Shatnawi, "A Path Generation Algorithm for Mobile Sinks in Wireless Sensor Networks," *International Conference on Innovations in Information Technology (IIT)*, pp. 164-168, Al-Ain, UAE, March 2013.
- C.12 **Eyad Taqieddin**, Jagannathan Sarangapani, "Vulnerability Analysis of Two Ultra-Lightweight RFID Authentication Protocols: RAPP and Gossamer," *2012 International Conference for Internet Technology and Secured Transactions (ICITST'12)*, pp. 80-86, London, UK, December 2012.
- C.13 Asmaa Seyam, Fahed Awad, **Eyad Taqieddin**, "Energy-Efficient Clustering Algorithm for Wireless Sensor Networks Using the Virtual Field Force," *5<sup>th</sup> International Conference on New Technologies Mobility and Security (NTMS'12)*, pp. 454-458 Istanbul, Turkey, May 2012.
- C.14 Feda' Al-Ma'aqbeh, Omar Banimelhem, **Eyad Taqieddin**, Fahed Awad, Moad Mowafi, "Fuzzy Logic Based Energy Efficient Adaptive Clustering Protocol," *3rd International Conference on Information and Communication Systems (ICICS12)*, Irbid, Jordan, April 2012.

- C.15 **Eyad Taqieddin**, Maciej Zawodniok, Jagannathan Sarangapani, Ann Miller, "Hardware Implementation of the Energy-Efficient Hybrid Key Management Protocol for Wireless Sensor Networks," *International Conference on Wireless Networks*, pp. 223- 229, Las Vegas, USA, July 2011.
- C.16 Moad Mowafi, Fahed Awad, **Eyad Taqieddin**, Omar Banimelhem, "Experimental Evaluation of Image Compression and Transmission for TinyOS-based Imote2 Platform," In *Proceedings of the International Conference on Innovations in Information Technology 2011 (IIT)*, pp. 173-178, Abu Dhabi, UAE, April 2011.
- C.17 Natheer Khasawneh, **Eyad Taqieddin**, Ahmad Al-Hammouri, "Collaborative Arabic Morphological Service," In *Proceedings of the 2<sup>nd</sup> International Conference on Arabic Language Resources and Tools (MEDAR)*, Cairo, Egypt, April, 2009.
- C.18 **Eyad Taqieddin**, Jagannathan Sarangapani, Ann Miller, "TLR: Trust Level Routing Protocol for Wireless Networks," In *Proceedings of the International Telemetry Conference*, pp. 839-848, Las Vegas, USA, November 2005.

#### **d. Contracts and Grants**

- D.1 Principal investigator, "Secure Mutual Authentication and Ownership Transfer Protocol in RFID Systems," funded by the Deanship of Scientific Research, Jordan University of Science and Technology, 2016.
- D.2 Co-investigator, "Improving the Functionality of LEACH Protocol Using Computational Intelligence Methods," funded by the Deanship of Scientific Research, Jordan University of Science and Technology, 2012.
- D.3 Co-investigator, "Experimental Performance Evaluation for Mobile Wireless Multimedia Sensor Networks", funded by the Deanship of Scientific Research, Jordan University of Science and Technology, 2010.
- D.4 Travel grants (7 times), 2011, 2012, 2013, 2014, 2015, 2016, and 2017.

#### **e. Presentations**

- E.1 Kainan Cha, Ahmet Soylemezoglu, Jeffrey Birt, Maciej Zawodniok, James Fonda, **Eyad Taqieddin**, Misty Millis-Harris, Can Saygin, and Jagannathan Sarangapani, "A Testbed for Validation and Benchmarking of Auto-ID Solutions," *AEROMAT'05*, Orlando, Florida, June, 2005.

#### **f. Research Visits**

- F.1 **Summer 2012:** Embedded Control Systems and Networking Laboratory, MST  
Worked on ultra-lightweight mutual authentication protocols for RFID systems. A new protocol was proposed, formally analyzed, and implemented and tested on the WISP tags. A patent was granted based on this work.
- F.2 **Summer 2013:** Embedded Control Systems and Networking Laboratory, MST  
Worked on ownership transfer and ownership delegation protocols for RFID systems. Multiple publications resulted from this work.

### 3. Awards and Recognition

- Dean's Recognition for successfully managing and organizing the 2<sup>nd</sup> National Capture The Flag competition at Jordan University of Science and Technology, 2018.
- Dean's Recognition for successfully managing and organizing the 1<sup>st</sup> National Capture The Flag competition at Jordan University of Science and Technology, 2017.
- IEEE Senior Member, 2015.
- Mentor, National Technology Parade 2013, Second Place Award, Intelligent Systems, May 2013.
- Mentor, National Technology Parade 2010, Second Place Award, Vehicles, May 2010.
- Dean's Recognition for conducting a feasibility study on initiating a new academic program in Network Engineering and Security, Jan. 2009.
- Ph.D. Scholarship from Jordan University of Science and Technology, 2004-2007.
- Scholarship from the International Centre for Scientific Culture (ICSC)-World Laboratory, Switzerland, for young scientists from developing countries, 2001.

### 4. Teaching and Advising

#### a. Courses Taught

Department of Network Engineering and Security, Jordan University of Science and Technology

<i>Course Number</i>	<i>Course Title</i>	<i>Semester</i>
NES 201	Communications Skills	F'10, F'11, F'14 S'11, S'12, S'13, S'15, S'16
NES 311	Data Communication	F'11, F'12, F'14, F'17, F'18, F'19 S'12, S'15, S'19
NES 413	Computer Networks Laboratory	F'15, F'18 S'16, S'17
NES 452	Cryptography and Network Security	F'13 S'13, S'14, S'18, S'19
NES 531	Network Management	F'13, F'14, F'15, F'16 S'14, S'17
NES 553	Network Security Lab	F'13, F'19, S'14
NES 780	Seminar in Network Engineering and Security	F'17, F'19

Department of Computer Engineering, Jordan University of Science and Technology

<i>Course Number</i>	<i>Course Title</i>	<i>Semester</i>
CPE 231	Digital Logic Design	F'03, F'12 S'04
CPE 252	Computer Organization and Design	F'03, F'08 S'04, S'08
CPE 253	Digital Logic Design Laboratory	F'10, F'11 S'08, S'12
CPE 254	Digital Logic Design and Computer Architecture (Non-CPE Students)	F'07 S'10
CPE 312	Engineering Computations	F'07

CPE 353	Microprocessor Systems (Non-CPE Students)	S'08, S'09
CPE 451	Microprocessor Systems Design	F'08, F'09 S'09
CPE 452	Microprocessor Interfacing Lab	F'08, F'09 S'09
CPE 542	Network Management and Security	F'09
CPE 770	Advanced Computer Networks	F'10 S'10, S'11
CPE 776	Computer Network Security	S'16

New York Institute of Technology (NYiT) – Amman Campus

<i>Course Number</i>	<i>Course Title</i>	<i>Semester</i>
INCS 615	Network Security and Perimeter Protection	S'10
EENG 775	Communication Systems	F'11 S'11

Missouri University of Science and Technology

<i>Course Number</i>	<i>Course Title</i>	<i>Semester</i>
CPE 213	Digital Systems Design	S'07
CPE 214	Digital Engineering Laboratory II	F'04, F'05, F'06 S'05, S'06, S'07
CS 73	Basic Scientific Programming	F'01 S'01, S'02
CS 77	Computer Programming Laboratory	F'02 S'03

#### **b. Course and Curriculum Development**

- Prepared a set of lab assignments for NES 531 (Network Management) to give the students a hands-on experience related to the SNMP concepts and implementation. Both simulated and actual environments are used.
- Worked with a group of faculty members to prepare the contents of NES 553 (Network Security Laboratory). The course is offered in Fall 2013 for the first time and is expected to give the students hands on experience with the concepts they had learned in the NES 451 (Fundamentals of Network Security) and the NES 452 (Cryptography and Network Security) courses.
- Prepared the course material for NES 452 (Cryptography and Network Security) and was responsible of selecting the textbook from a list of seven available. The students' feedback is very positive and currently minor modifications are being done to move the course more towards the practical world.
- Actively participated in the development of the NES 201 (Communication Skills) course. Was also responsible for handling the improvement of in-class training material.
- Member of a group of faculty members to prepare ABET-compliant syllabi for all department courses.
- Served as a team member to prepare course description for all microprocessor systems related courses in the newly revised undergraduate curriculum.

**c. Manuals, Notes, and Software**

- Manuals.
  - Created a lab manual to be used in the internal lab for CPE542 (Network Management and Security).
  - Actively involved in the review and modification of the manual used in the CPE 452 (Interfacing Laboratory) manual.
- Lecture notes. Created lecture notes and/or slides for the following courses: CPE252 (Computer Design and Organization), CPE353 (Microprocessor Systems), CPE542 (Network Management and Security), NES 452 (Cryptography and Network Security), and NES 531 (Network Management).
- Software. In the CPE 252 (Computer Design and Organization course), the adopted textbook presents the Mano machine which is used to explain the concepts of design and assembly programming. Along with another colleague, we developed a simulator that allows the students to input their assembly code and visually follow how the instructions are fetched, decoded, and executed. Students' feedback is encouraging and their performance has been affected positively.

**d. Advising (non-research)**

- Academic advisor for 30 students per semester at the Department of Network Engineering and Security. 2009-present.
- Supervised/co-supervised about 40 senior projects for about 120 students and served as a member of a project examination committee for over 60 senior projects.
- A list of selected senior projects under my supervision.

<i>Title of the Project</i>	<i>Team Size</i>	<i>Semesters</i>
GazMe: A System for Automated Refueling at Stations	7	F'18 & S'19
Smartphone-Arduino-based Blood Glucose Tracker for Children with Type-1 Diabetes.	3	F'17 & S'18
Security Evaluation and Enhancement of the JUST Fingerprint Attendance System	4	F'16 & S'17
An SNMP-based System for Patient Vital Sign Tracking.	4	F'15 & S'16
SNMP-Based Parental Control of Smartphones	4	F'14 & S'15
Smartphone-based Utility Meter Reader	3	S'14 & F'14
Security Application for Android-based Smartphones	2	F'13 & S'14
Road Status Notifier in Smart Cities *	3	F'12 & S'13
Design and Implementation of a Multimedia-Capable Wireless Sensor Mote	3	S'11 & F'11
Implementation of a Routing Protocol for WSN	3	S'10 & F'10
Mobile Object Tracking System using Wireless Sensor Networks	3	S'10 & F'10
Arabic Morphological Analyzer	2	S'09 & F'09
Auto Ticketing System using GPS *	3	S'09 & F'09
Hardware Assisted Hypervisor for Embedded Devices	3	S'09 & F'09
GPS Tracking System	3	S'08 & F'08
Bluetooth Wireless LAN	1	F'08 & S'09
Implementation of a Bluetooth-Based Remote Control	3	F'07 & S'08
Encryption and Decryption Services using the Intel 8051 Microcontroller	2	F'07 & S'08

\* National Award Winner



**e. Advising (research)**Master Thesis Supervised/Co-Supervised

<i>Student</i>	<i>Graduation Date</i>	<i>Title of the Thesis</i>
Hala Abu Dhailah	Aug'18	Cryptanalysis and Improvement of a Lightweight Grouping Proof Protocol for RFID Systems.
Heba Zaghal	June'16	Cryptanalysis and Enhancement of Cyclic Redundancy Check Based Mutual Authentication Protocols in RFID Systems.
Hiba Al-Dahoud	Dec'15	Cryptanalysis and Improvement of Mutual Authentication Protocols in Radio Frequency Identification Systems.
Feda' Al-Ma'aqbeh	June'14	Enhanced Target Coverage in Wireless Sensor Networks Using Fuzzy Logic.
Hani Alshater	Jan'14	Node Mobility Exploitation Algorithms for Optimizing Performance of Wireless Sensor Networks.
Ibrahim Shatnawi	May'13	An Efficient Path Generation Algorithm using the Principle Component Analysis for Mobile Sinks in Wireless Sensor Networks.
Asmaa Seyam	July'11	A Node Location Optimization Algorithm for Energy-Efficient Clustering in Wireless Sensor Networks.
Sally Abdallah	July'11	Transitive Location Verification Algorithm in Location-Based Routing for Wireless Sensor Networks.

Doctoral Thesis Supervised/Co-Supervised

*There are no Ph.D. programs offered by the Faculty of Computer and Information Technology at JUST.*

**f. Thesis Committees**Master thesis I served in as a committee member/examiner

<i>Student</i>	<i>Grad. Date</i>	<i>Title of the Thesis</i>
Abdulmughni Hamzah	July'16	Energy-Efficient Clustering in Wireless Sensor Networks using Fuzzy Logic
Fatima Qudah	Aug'14	Efficient and Adaptive Computation Control for Variable Complexity Fano Algorithm over Wireless Networks
Asma' Bataineh	June'14	Enhanced FPGA Implementations of the Scalable Montgomery Multiplication Algorithm
Salah Harb	April'14	FPGA-based Embedded System Implementation of the AES Algorithm
Dima Kasasbeh	Jan'14	A Secure High-Capacity Image Steganography Technique Based on Histogram Modification and Huffman Encoding
Ammar Al-Lataifeh	May'13	Multi-Source Geographic Routing Protocol with Disjoint Paths for Wireless Multimedia Sensor Networks
Emad Al-Nawafa	Dec'12	Determining the Number of Active Sensors for an Energy-Efficient and Area Coverage-Aware Method in WSNs
Rami Al-Hailat	Jan'10	Enhancing Text-Based Search for Web Images
Nuh Tulic'	June'09	FPGA Implementations of Decimal Arithmetic Cells
Ghassan Rayyashi	Jan'09	Information Hiding using New Histogram Based Steganographic Techniques

## 5. Service

### a. Professional

- Technical Committee. *Armed Forces Communications and Electronics Association, Jordan Chapter. August 2019 – Present*
- Program Committee Member. *The ACS/IEEE International Conference on Computer Systems and Applications (AICCSA'19)*, Abu Dhabi, UAE, to be held in November 2019.
- Steering Committee, *The Tenth International Conference of Information and Communications Systems (ICICS'19)*, Jordan University of Science and Technology, June 2019.
- IEEE JUST Student Branch Counselor, 2018 – Present
- IEEE JUST Computer Society Chapter Founding Advisor, 2016 – Present.
- Initiator of the National Capture The Flag competition held at JUST involving the participation of students from 10 local universities. 2016 – Present.
- Actively participated in the formulation of the Jordanian National Cybersecurity Strategy through the Ministry of Information and Communications Technology, 2016.
- Worked with a team from the Ministry of Higher Education and Scientific Research on a project for digital signing of documents through the use of QR codes, 2015.
- IEEE Extreme Competition Proctor for several years.
- Program Committee Vice Chair, 10<sup>th</sup> IEEE International Design & Test Symposium (IDT'15), 2015.
- Project Evaluation Committee Member. Robotics. *The 7<sup>th</sup> National Technology Parade*, Jordan University, Jordan, April 2015.
- Program Committee Member. *The 2013 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT'13)*, University of Jordan, to be held in Dec. 2013.
- Project Evaluation Committee Member. Robotics. *The 6<sup>th</sup> National Technology Parade*, Mu'tah University, Jordan, May 2013.
- Program Committee Member. *The Third International Conference of Information and Communications Systems (ICICS'12)*, Jordan University of Science and Technology, April 2012.
- Scientific Board Member. *Applied Scientific Research Fund*, Amman – Jordan.
- Voluntary Cryptography and Network Security Workshop. Offered a voluntary workshop on the fundamentals of cryptography and network security for the Engineering Unit of the Royal Jordanian Air Force, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid-Jordan, 7-10 April, 2013.
- Session Chair. *The Second International Conference of Information and Communications Systems (ICICS'11)*, Jordan University of Science and Technology, May 2011.
- Program Committee Member. *The Second International Conference of Information and Communications Systems (ICICS'11)*, Jordan University of Science and Technology, May 2011.
- Program Committee Member. *The First International Conference on Digital Communications and Computer Applications (DCCA'07)*, Jordan University of Science and Technology, Mar. 2007.
- Served as reviewer for the following journals:
  - EURASIP Journal on Wireless Communications and Networking

- IEEE Access
- IEEE Communications Surveys and Tutorials.
- Information Sciences
- Information Security Journal: A Global Perspective.
- International Journal of Communication Systems
- International Journal of Modeling and Simulation.
- Journal of Emerging Technologies in Web Intelligence.
- Journal of Circuits, Systems, and Computers.
- Journal of Network and Computer Applications
- Wireless Personal Communications
- Security and Communication Networks

**b. University**

- Vice Dean, Faculty of Computer and Information Technology, 2019 – Present.
- Director of the SHMAGH Security Operations Center at JUST. 2018 – Present.
- Member of the University Council. 2018 – 2019.
- Co-founder and member of the *Multimedia Networking Research Laboratory*. 2010 – Present.
- Member of the *Innovative Programming Laboratory*. 2016 – Present.
- Chairman, Department of Network Engineering and Security, 2016 – 2018.
- Chair of the Self-Study Report preparation team for the ABET accreditation. 2015 – 2016.
- Member of Computer and Information Technology College Council. 2011 – 2012, 2016 – Present.
- Member, *Organizing Committee of the 3<sup>rd</sup> National Technology Parade*. 2010.
- Member. *3<sup>rd</sup> National Technology Parade Organizing Committee*. 2009-2010.
- Practical Training Coordinator. Department of Computer Engineering. 2008 – 2009.
- Co-founder of the Undergraduate Program of Network Engineering and Security, 2008.
- Member of the team to administer a feasibility study on initiating the undergraduate program in Network Engineering and Security. 2007-2008.

**i. Department Committees**

<i>Committee</i>	<i>Role</i>	<i>Period</i>
<i>Curriculum and Accreditation Committee</i>	Member	2018 – Present
<i>Scientific Research Committee</i>	Member	2018 – Present
<i>Graduate Studies Committee</i>	Member	2018 – Present
<i>Search Committee</i>	Member	2015 – Present
<i>Scientific Research Committee</i>	Chair	2016 – 2018
<i>Graduate Studies Committee</i>	Chair	2016 – 2018
<i>Curriculum and Quality Assurance Committee</i>	Member	2014 – 2018

<i>Senior Design Projects Committee</i>	Chair	2011 – 2017
<i>Senior Design Projects Committee</i>	Member	2019 – Present
<i>Laboratories and Tenders Committee</i>	Chair	2011 – 2016
<i>Network Security Laboratory Establishment Committee</i>	Chair	2012 – 2013
<i>Laboratories and Tenders Committee</i>	Member	2009 – 2011
<i>Senior Design Projects Committee</i>	Member	2008 – 2011
<i>ABET Accreditation Preparation Committee</i>	Member	2010 – 2011
<i>Field Training Committee</i>	Member	2009 – 2010
<i>Laboratory Equipment Assessment Committee</i>	Chair	2009

ii. College Committees

<i>Committee</i>	<i>Role</i>	<i>Period</i>
Initiatives and Innovation Committee	Chair	2019 – Present
Initiatives and Innovation Committee	Member	2017 – 2019
Field Training Committee	Member	2017 – Present
Graduate Studies Committee	Member	2017 – 2019
Honor Class Curriculum Committee	Chair	2017 – 2018
ABET Accreditation and Quality Assurance Committee	Chair	2016 – Present
Curriculum and Course Equivalency Committee	Chair	2019 – Present
Curriculum and Course Equivalency Committee	Member	2016 – 2019
Scientific Research Committee	Member	2016 – 2019
Social and Cultural Activities Committee	Chair	2012 – 2013
<i>Initiation of the Program in Network Engineering and Security Committee</i>	Member	2008 – 2009
<i>Student Efficiency Improvement Committee</i>	Member	2008 – 2009

## 6. Training Courses and Workshops

i. Courses and Workshops Attended

- *Quality of Online Courses: Applying the Quality Matters Rubric*, Academic Development and Quality Assurance Center, Jordan University of Science and Technology, Irbid – Jordan, 22 – 24 April, 2019.
- *Cybersecurity Infrastructure Configuration - Train The Trainer*, Palo Alto Networks, Amman – Jordan, 27 – 29 January 2019.

- *Cisco Certified Academy Instructor*, Cisco Academy, Princess Sumaya University of Technology, Amman – Jordan, September 2016 – May 2017.
  - *E-Learning: Open Education Resources*, Academic Development and Quality Assurance Center, Jordan University of Science and Technology, Irbid – Jordan, 9 – 10 June, 2015.
  - *Innovation Teaching in Higher Education*, Academic Development and Quality Assurance Center, Jordan University of Science and Technology, Irbid – Jordan, 26 – 27 May, 2015.
  - *Certified Professional Trainer*, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid – Jordan, 11 – 25 May, 2013.
  - *Train the Trainer*, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid – Jordan, 27 April – 2 May, 2013.
  - *Critical Thinking and Creative Thinking*, Academic Development Center, Jordan University of Science and Technology, Irbid – Jordan, 9 April, 2013.
  - *FP7 workshop*, Princess Sumaya University for Technology, Amman – Jordan, September 26-28, 2011.
  - *Statistical Analysis of Examinations & Research*, Academic Development Center, Jordan University of Science and Technology, Irbid – Jordan, 14 –15 November, 2009.
  - *Modern University Instructional Methods*, Academic Development Center, Jordan University of Science and Technology, Irbid – Jordan, 12 –14 May, 2008.
  - *Testing and Evaluation*, Academic Development Center, Jordan University of Science and Technology, Irbid – Jordan, 21 – 22 November, 2007.
  - *Basic Web Technology Skills for Courseware Development*, UNESCO USEE Project, Cairo University, Cairo-Egypt, 1 – 5 April, 2000.
- Courses and Workshops Offered
    - *Cisco Certified Network Associate (CCNA)*, Cisco Academy, Jordan University of Science and Technology, Irbid-Jordan, February – May, 2019.
    - *Computer Skills*, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid-Jordan, 7 – 10 April, 2013.
    - *Communication Skills*, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid-Jordan, 27 – 30 January, 2013.
    - *Fundamentals of Cryptography and Network Security*, Consultative Center for Science and Technology, Jordan University of Science and Technology, Irbid-Jordan, 13 – 15 September, 2011.

## 7. AFFILIATIONS

- Senior Member, The Institute of Electrical and Electronics Engineers (IEEE).
- Jordan Engineers Association (JEA).