CURRICULUM VITAE

PERSONAL INFORMATION

Name	**SAUD ALTHUNIBAT**
Address	**KARAK, JORDAN**
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Nationality	Jordanian

WORK EXPERIENCE

• Dates (from – to)	06 September 2015 – Now
• Name and address of employer	Al-Hussein Bin Talal University, Jordan
• Occupation or position held	Full Professor: 01 Nov 2023 – Now Associate Professor: 15 June 2019 – 31 Oct 2023 Department Head: 06 September 2017- 16 September 2018 Assistant Professor: 06 September 2015- 15 June 2019
• Main activities and responsibilities	Teaching and Research duties at the Department of Communications Engineering
• Dates (from – to)	01 March 2023 – 1 Feb 2025 2025
• Name and address of employer	Texas A&M University at Qatar, Doha, Qatar
• Occupation or position held	Adjunct Professor and Research Scientist
• Main activities and responsibilities	Teaching and Research duties and Research projects management
• Dates (from – to)	15 June 2019 – 15 September 2019
• Name and address of employer	Texas A&M University at Qatar, Doha, Qatar
• Occupation or position held	Visiting Researcher
• Main activities and responsibilities	Research visit at the Department of Electrical and Computer Engineering
• Dates (from – to)	15 NOVEMBER 2014 - 24 MAY 2015
• Name and address of employer	University of Trento, Trento, Italy
• Occupation or position held	Postdoctoral Researcher
• Main activities and responsibilities	Research on Cognitive Radio Networks
• Dates (from – to)	01 OCTOBER 2012 - 29 JANUARY 2013
• Name and address of employer	National Center for Scientific Research "DEMOKRITOS", Athens, Greece
• Occupation or position held	Visiting Researcher
• Main activities and responsibilities	Research on Handover within Heterogeneous Networks
• Dates (from – to)	30 JUNE 2011 - 29 JUNE 2014
• Name and address of employer	University of Trento, Trento, Italy
• Occupation or position held	Early Stage Researcher
• Main activities and responsibilities	Involved in GREENET project (Initial Training Network Marie Curie Project)
• Dates (from – to)	MARCH 2005 - JUNE 2011
• Name and address of employer	Mutah University, Karak, Jordan
• Occupation or position held	Lab Instructor

• Main activities and responsibilities	Electrical Circuits, Electronics, Analog Communications, digital communications, measurements and devices and Logic Design.

EDUCATION

• Dates (from – to)	November 2011 - November 2014
• Name of organization	University of Trento, Trento, Italy
• Principal subjects	Telecommunications Engineering
• Title of qualification awarded	PhD
• Dates (from – to)	August 2008 - August 2010
• Name of organization	University of Jordan, Amman, Jordan
• Principal subjects	Electrical Engineering\ Communications
• Title of qualification awarded	Master
• Dates (from – to)	September 2000 - September 2004
• Name of organization	Mutah University, Karak, Jordan
• Principal subjects	Electrical Engineering\ Communications
• Title of qualification awarded	Bachelor

MOTHER TONGUE

ARABIC

OTHER LANGUAGES

ENGLISH (EXCELLENT), ITALIAN (GOOD)

ORGANIZATIONAL SKILLS AND COMPETENCES

- Serving as a member of the IEEE ComSoc Europe, Middle East and Africa Board (EMEA) 2020-now.
- Serving as a Coordinator of the Distinguished Lecturer Tour (DLT) program at IEEE ComSoc, EMEA Region, 2020-now.
- Served as Vice-Chair, IEEE ComSoc-Jordan Chapter, 2017-2019.
- Served as Guest Editor, in Mobile Networks and Applications Journal.
- Served as a general co-chair at the International Conference on Broadband Communications, Networks, and Systems (BROADNET). 2018 (Faro-Portugal)
- Served as a track chair at the International Conference on Wireless Communication Systems and Networks 2018 (Amman-Jordan).
- Served as a session chair at the IEEE International Workshop in Computer Aided Modeling Analysis and Design of Communications Links and Networks (CAMAD) 2013 (Berlin-Germany).
- Served as a session chair at the IEEE Vehicular Technology Conference 2014-Spring (Seoul-South Korea).
- Served as Technical Program Committee (TPC) member in the following conferences:
  - IEEE Global Communications Conference 2012-2021.
  - IEEE International Communications Conference 2013-2021.
  - IEEE Vehicular Technology Conference 2014-2021.
  - IEEE International Workshop in Computer Aided Modelling and Design of Communications Links and Networks (CAMAD) 2012-2021.
  - IEEE International Conference in e-Health Networking, Applications and Services (Healthcom) 2013 & 2014.
  - IEEE Mediterranean Electrotechnical Conference (MELECON) 2014-2021.
  - International Conference in Connected Vehicles and Expo (ICCVE) 2012 & 2013.
  - International Conference in Communications and Information Technology (ICCIT) 2013.
- Served as a reviewer in the following international journals:
  - IEEE Communications Magazine.
  - IEEE Communications Surveys and Tutorials.
  - IEEE Transactions on Communications.
  - IEEE Transactions on Wireless Communications.
  - IEEE Transactions on Vehicular Technology.
  - IEEE Communications Letters.
  - IEEE Wireless Communications Letters.
  - IEEE Signal Processing Letters.
  - Journal of AD-Hoc Networks.
  - International Journal of Communication Systems (IJCS).
  - Journal of Mobile Networks and Applications (MONET).

AWARDS

- BEST-PAPER AWARD IEEE ICCSPA 2024
- BEST-PAPER AWARD/ IEEE GLOBECOM 2022
- DISTINGUISHED RESEARCHER AWARD 2021, HAMDI MANGO CENTRE, UNIVERSITY OF JORDAN, JORDAN.
- BEST-PAPER AWARD / IEEE CAMAD 2012.
- IEEE Communication Letters: Reviewer Appreciation Program 2013: Exemplary Reviewers

FUNDED PROJECTS

- RESOLVE (RESILIENT SOLUTIONS FOR VULNERABILITIES AND EMERGENCIES): AN EFFECTIVE NATIONAL RISK MANAGEMENT PLAN FOR QATAR
  FUNDED BY: QATAR NATIONAL RESEARCH FUND 2023-2027
  ROLE: CO-PI
  BUDGET: 4,400,000 $

- INTRODUCING RECENT DEVELOPMENTS OF ELECTRICAL ENGINEERING INTO UNDERGRADUATE CURRICULUM (IREEDER),
  FUNDED BY THE EUROPEAN COMMISSION 2019-2022.
  ROLE: LEAD -PI
  BUDGET: 768.000 EURO
  MAIN FOCUS: THE PROJECT AIMED AT CREATING BACHELOR'S DEGREE SUBJECTS WITH APPROPRIATE LABORATORIES IN INTERNET OF THINGS, CYBER SECURITY AND RENEWABLE ENERGY TAUGHT BY UNIVERSITIES IN JORDAN AND BROUGHT INTO LINE WITH THE EU REQUIREMENTS, AS WELL AS ENGAGING FACULTY IN THE DEVELOPMENT OF ONLINE LECTURES AND LABORATORY.

- DEVELOPING PHYSICAL-LAYER SECURITY SCHEMES FOR INTERNET OF THINGS NETWORKS
  FUNDED BY: NATO – SCIENCE FOR PEACE AND SECURITY 2020-2023
  ROLE: CO-PI
  BUDGET: 400.000 EURO.
  MAIN FOCUS: THIS PROJECT AIMED TO PROPOSE LIGHTWEIGHT SECURITY MECHANISMS TAILORED FOR INTERNET OF THINGS NETWORKS CONSIDERING THE PHYSICAL-LAYER SECURITY APPROACHES.

- A HYBRID WIRELESS SENSOR NETWORK FOR EARLY WARNING AND IDENTIFICATION OF NATURAL DISASTERS (RESCUE)
  FUNDED BY: NATO – SCIENCE FOR PEACE AND SECURITY 2022-2025
  ROLE: CO-PI
  BUDGET: 350.000 EURO
  MAIN FOCUS: THIS PROJECT IS FOCUSING ON DEVELOPING EARLY WARNING SYSTEMS THAT CAN EXPLOIT RECENT ADVANCES IN WIRELESS SENSOR NETWORKS IN ORDER TO IMPROVE DETECTION ACCURACY, RESPONSE TIME, ENERGY EFFICIENCY AND RELIABILITY, INCLUDING THE USE OF HYBRID TRANSMISSION AND UNMANNED AERIAL VEHICLES TO GATHER RESULTS IN WIRELESS SENSOR NETWORKS.

RESEARCH INTERESTS

- Physical Layer Security
- Space Modulation and Index Modulation.
- Millimetre Wave Systems
- Hybrid FSO/RF systems
- Spectrum Sharing
- Wireless Sensor Networks
- Internet of Things
- Delay-Tolerant Networks
- Multiple Input Multiple Output Schemes.
- Cooperative Sensing in Cognitive Radio Networks
- Heterogeneous Networks
- Security Threats in Cognitive Radio Networks
- Routing and Security issues in Wireless Sensor Networks
- Resource Management in Wireless Communications

TEACHING ACTIVITIES

I have taught the following courses:

- Mobile Communications – BSc degree
- Introduction to Internet of Things – BSc degree
- Digital Signal Processing – BSc degree
- Probability Theory and Random Variables – BSc degree
- Data Transmission – BSc degree
- Signals and Systems – BSc degree
- Networks –BSc degree
- Wireless Networks – BSc degree
- Engineering Maths – BSc degree
- Selected Topics in Communications Engineering – BSc degree
- Digital Communications – BSc degree
- Digital Communications – MSc degree
- Wireless Communications -– MSc degree
- Random Variables and Stochastics Processes – MSc degree

Publication List

Patents

[P1] K. Qaraqe, R. Mesleh, and S. Althunibat, **"Spectral efficient uplink multiple access techniques using index modulation."** U.S. Patent Application 16/901, 567, filed December 17, 2020.

Book-Chapters

[BC1] S. Althunibat et. al., "**Energy-Efficient Cooperative Spectrum Sensing for Cognitive Radio Networks",** a chapter in the book **"Software-Defined and Cognitive Radio Technologies for Dynamic Spectrum Access and Management,".** IGI Global 2014**.**

[BC2] M. de Ree, S. Dogan-Tusha, E. Illi, M. Qaraqe, S. Althunibat, G. Mantas and J. Rodriguez, ``**Physical Layer Security for RF-Based Massive IoT",** a chapter in the book **"*Security and Privacy for 6G Massive IoT*",** Wiley Online Library, 2025.

Journals:

[J1] H. Hassan, S. Althunibat, M. Hasna and K. Qaraqe, ‘’**A novel secrecy-based switching mechanism for hybrid FSO/RF systems**. *Optics Communications*, vol. 591, 131991.

[J2] E. Illi, A. Al-Mbaideen, S. Althunibat and M. Qaraqe, "**A Novel Low-Complexity Bitwise Detection Scheme for SIMO Systems**," in *IEEE Communications Letters*, doi: 10.1109/LCOMM.2025.3576720..

[J3] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**OAM-Based Optical Wireless Security: Leveraging Beam Misalignment and Crosstalk for Eavesdropping Resistance**," in *IEEE Communications Letters*, doi: 10.1109/LCOMM.2025.3581505..

[J4] H. Hassan, S. Althunibat, A. Al-Mbaideen, M. Hasna and K. A. Qaraqe, **"A Survey on Hybrid Free Space Optical and Radio Frequency Systems: Classification, Progress, Observations, and Challenges**," in *IEEE Access*, vol. 13, pp. 63994-64060, 2025.

[J5] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**Joint THz Communication and 3D Map Reconstruction Using Swarm UAVs for Maximum LoS Coverage**," in *IEEE Transactions on Aerospace and Electronic Systems*, doi: 10.1109/TAES.2025.3549013.

[J6] T. Alshamaseen, E. Illi, S. Waqas Haider Shah, S. Althunibat and M. Qaraqe, "**Secrecy Performance of a RIS-Assisted Wireless Network: A Comprehensive Analysis Under Outdated CSI**," in *IEEE Open Journal of the Communications Society*, vol. 6, pp. 1914-1930, 2025.

[J7] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**UAV-BASED Dynamic FSO Access Networks: Technological Comparison, Design Considerations, and Future Directions**," in *IEEE Wireless Communications*, vol. 32, no. 2, pp. 247-253, April 2025.

[J8] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**How Secure are AAV-Based FSO Links With Modulating Retroreflectors?,**" in *IEEE Wireless Communications Letters*, vol. 14, no. 3, pp. 606-610, March 2025.

[J9] A. Almohamad, M. Ibrahim, S. Ekin, M. Hasna, S. Althunibat and K. Qaraqe, "**Optimizing Non-Terrestrial Hybrid RF/FSO Links With Reinforcement Learning: Navigating Through Clouds**," in *IEEE Open Journal of the Communications Society*, vol. 6, pp. 793-806, 2025.

[J10] S. W. H. Shah, M. Qaraqe, S. Althunibat and J. Widmer, "**Optimizing QoS in Secure RIS-Assisted mmWave Network With Channel Aging**," in *IEEE Transactions on Vehicular Technology*, vol. 74, no. 1, pp. 1416-1432, Jan. 2025.

[J11] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, **"Modulating Retroreflector-Based Satellite-to-Ground Optical Links: Joint Communications and Tracking**," in *IEEE Transactions on Communications*, vol. 73, no. 3, pp. 1950-1962, March 2025.

[J12] F. Ay, S. Althunibat, K. A. Qaraqe and H. Kurban, "**A Noise-Adaptive Machine Learning Framework for Optimizing User Grouping in Dynamic IM-OFDMA Systems**," in *IEEE Transactions on Communications*, vol. 73, no. 3, pp. 1862-1878, March 2025.

[J13] M. T. Dabiri, S. Althunibat, M. Hasna and K. Qaraqe, "**Non-Orthogonal Multiple Access Scheme Using Directional THz Antennas Under Positioning Errors**," in *IEEE Transactions on Vehicular Technology*, vol. 73, no. 12, pp. 17963-17976, Dec. 2024.

[J14] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**LoS Coverage Analysis for UAV-based THz Communication Networks: Towards 3D Visualization of Wireless Networks**," in *IEEE Transactions on Aerospace and Electronic Systems*, vol. 60, no. 6, pp. 8726-8743, Dec. 2024.

[J15] M. T. Dabiri, M. Hasna, S. Althunibat and K. Qaraqe, "**Modulating Retroreflector-based Satellite-to-Ground Optical Communications: Acquisition, Sensing and Positioning**," in *IEEE Transactions on Communications*, vol. 73, no. 1, pp. 483-497, Jan. 2025.

[J16] S. Althunibat and K. Qaraqe, "**A Dual-Hop Uplink IM-OFDMA System With Amplify-and-Forward Relays,**" in *IEEE Transactions on Green Communications and Networking*, vol. 9, no. 1, pp. 45-54, March 2025.

[J17] W. Belaoura, S. Althunibat and K. Qaraqe, "**Enhanced-Diversity Index Modulation Based Orthogonal Frequency Division Multiple Access Scheme**," in *IEEE Communications Letters*, vol. 28, no. 7, pp. 1678-1682, July 2024.

[J18] R. Al-Khatab, S. Althunibat et al., "**Performance Analysis of Dual-hop UAV-Assisted mmWave Links Considering Orientation Fluctuations**," in *IEEE Access*, vol. 12, pp. 32518-32531, 2024.

[J19] H. F. Hassan, S. Althunibat et al., "**Performance Analysis of Two-Way Relaying in mmWave-Based Aerial Links**," in *IEEE Open Journal of the Communications Society*, vol. 5, pp. 1047-1056, 2024

[J20] E. Illi, M. Qaraqe, S. Althuibat *et al*., "**Physical Layer Security for Authentication, Confidentiality, and Malicious Node Detection: A Paradigm Shift in Securing IoT Networks**," in *IEEE Communications Surveys & Tutorials*, vol. 26, no. 1, pp. 347-388, Firstquarter 2024.

[J21] S. Althunibat, M. T. Dabiri, M. O. Hasna and K. Qaraqe, "**Secrecy Analysis of Directional mmWave UAV-Based Links Under Hovering Fluctuations**," in *IEEE Open Journal of the Communications Society*, vol. 4, pp. 3030-3039, 2023.

[J22] T. Alshamaseen, S. Althunibat, M. Qaraqe, E. Illi and M. Usman, "**Index Modulation Based Key Exchange Scheme for Internet of Things Networks**," in IEEE Internet of Things Journal, vol. 11, no. 2, pp. 2606-2617, 15 Jan.15, 2024.

[J23] S. Doğan-Tusha, A. Tusha, S. Althunibat and K. Qaraqe, "**Orthogonal Time Frequency Space Multiple Access Using Index Modulation**," in IEEE Transactions on Vehicular Technology, vol. 72, no. 12, pp. 15858-15866, Dec. 2023.

[J24] S. Dogan-Tusha, S. Althunibat and M. Qaraqe, "**Doppler Shift based Sybil Attack Detection for Mobile IoT Networks**," in IEEE Internet of Things Journal, vol. 11, no. 1, pp. 1136-1147, 1 Jan.1, 2024.

[J25] O. Alaca, S. Althunibat, S. Yarkan, S. L. Miller and K. A. Qaraqe, "**Secrecy Analysis of Uplink IM-OFDMA Systems in the Presence of IQ Imbalance**," in IEEE Transactions on Vehicular Technology, vol. 72, no. 11, pp. 14411-14425, Nov. 2023.

[J26] O. Alaca, S. Althunibat, S. Yarkan, S. L. Miller and K. A. Qaraqe, "**Secure Uplink IM-OFDMA With Artificial IQ Imbalance,**" in IEEE Access, vol. 11, pp. 57305-57318, 2023.

[J27] S. Althunibat, S. C. Tokgoz, S. Yarkan, S. L. Miller and K. A. Qaraqe, "**Physical Layer Security of Dual-Hop Hybrid FSO-mmWave Systems**," in IEEE Access, vol. 58209-58227, 2023.

[J28] S. Althunibat, A. Alhasanat and K. Alhasanat, "**Efficient Cluster Heads Selection Based on Index-Modulation in Wireless Sensor Networks**," in IEEE Access, vol. 11, pp. 54428-54437, 2023.

[J29] O. Alaca, S. Althunibat, S. Yarkan, S. L. Miller and K. A. Qaraqe, "**Analysis and Compensation of Tx and Rx IQ Imbalances in Uplink IM-OFDMA Systems**," in IEEE Transactions on Vehicular Technology, vol. 72, no. 10, pp. 12956-12969, Oct. 2023.

[J30] S. Althunibat, H. Hassan, T. Khattab and N. Zorba, "**A New NOMA-based Two-Way Relaying Scheme**," in IEEE Transactions on Vehicular Technology, vol. 72, no. 9, pp. 12300-12310, Sept. 2023.

[J31] T. Alshamaseen, S. Althunibat, M. Qaraqe, H. Alashaary. "**Phase-assisted NOMA based key distribution for IoT networks".** Trans Emerging Tel Tech. 2023; 34(4) :e4738. doi: 10.1002/ett.4738.

[J32] A. Tusha, S. Althunibat, M. O. Hasna, K. Qaraqe and H. Arslan, **"Exploiting User Diversity in OTFS Transmission for Beyond 5G Wireless Systems**," in IEEE Wireless Communications Letters, vol. 11, no. 8, pp. 1689-1693, Aug. 2022.

[J33] M. Qaisi, S. Althunibat and M. Qaraqe, **"Phase-Assisted Dynamic Tag-Embedding Message Authentication for IoT Networks**," in IEEE Internet of Things Journal, vol. 9, no. 20, pp. 20620-20629, 15 Oct.15, 2022.

[J34] M. Usman, S. Althunbat and M. Qaraqe, "**A Channel State Information Based Key Generation Scheme for Internet-of-Things**", Security and Communication Networks, Vol. 2022, May 2022.

[J35] S. C. Tokgoz, S. Althunibat, S. L. Miller, K. A. Qaraqe, ``**Physical layer security in MIMO hybrid FSO-mmWave systems: A learning-based link selection approach"**, Optics Communications, Vol. 512, 2022,

[J36] S. C. Tokgoz, S. Althunibat, S. L. Miller and K. A. Qaraqe, "**On the Secrecy Capacity of Hybrid FSO-mmWave Wiretap Channels**," in IEEE Transactions on Vehicular Technology, vol. 71, no. 4, pp. 4073-4086, April 2022.

[J37] O. Alaca, S. Althunibat, S. L. Miller and K. A. Qaraqe, "**Analysis of Receiver IQ-Imbalance in IM-OFDMA Uplink Systems**," in IEEE Communications Letters, vol. 26, no. 4, pp. 917-921, April 2022.

[J38] S. C. Tokgoz, S. Althunibat, S. L. Miller and K. A. Qaraqe, "**Outage Analysis of Relay-Based Dual-Hop Hybrid FSO-mmWave Systems**," in *IEEE Access*, vol. 10, pp. 2895-2907, 2022.

[J39] Z. Altarawneh, S. Althunibat, and R. Mesleh**, ``Optical wireless sensor networks using tunable optical filters",** Physical Communication, Vol. 52, 2022.

[J40] A. Tusha, SD. Tusha, F. Yilmaz, S. Althunibat, K. Qaraqe, H. Arslan**, "Performance Analysis of OTFS under In-Phase and Quadrature Imbalance at Transmitter",** IEEE Transactions on Vehicular Technology, vol. 70, no. 11, pp. 11761-11771, Nov. 2021.

[J41] S. Tokgoz, S. Althunibat, SC Miller, K. Qaraqe**, "On the secrecy capacity of hybrid FSO-mmWave links with correlated wiretap channels**", Optics Communications, Vol. 499, November 2021.

[J42] M Alzard, S Althunibat, K Umebayashi, N Zorba, **"Performance Analysis of Resource Allocation in THz-based Subcarrier Index Modulation Systems for Mobile Users",** IEEE Access, vol. 9, pp. 129771-129781, 2021.

[J43] A. Alhasanat, S. Althunibat, M. Alhasanat, M. Alsafasfeh**, ``Index modulation based decision gathering schemes for wireless sensor networks**", Transactions on Emerging Telecommunications Technologies. 2021; e4298.

[J44] SD. Tusha, A. Tusha, E. Basar, S. Althunibat, K. Qaraqe, H. Arslan, **"Inter-numerology interference in OFDM-IM systems"**, IET Communications, vol. 15, No. 15, September 2021.

[J45] A. Abushattal, S. Althunibat, M. Qaraqe and H. Arslan, "**A Secure Downlink NOMA Scheme Against Unknown Internal Eavesdroppers**," IEEE Wireless Communications Letters, vol. 10, no. 6, pp. 1281-1285, June 2021.

[J46] A. Alhasanat, S. Althunibat, M. Alhasanat and M. Alsafasfeh, **"An Efficient Index-Modulation-Based Data Gathering Scheme for Wireless Sensor Networks,"** IEEE Communications Letters, vol. 25, no. 4, pp. 1363-1367, April 2021.

[J47] SC. Tokgoz, S. Althunibat, SL. Miller, K. Qaraqe, "**Performance analysis of index modulation-based link-selection mechanism for hybrid FSO-mmWave systems",** Optics Communications, Vol. 479, 2021.

[J48] A. Almohamad, M. O. Hasna, S. Althunibat and K. Qaraqe, **"A Novel Downlink IM-NOMA Scheme,"** IEEE Open Journal of the Communications Society, vol. 2, pp. 235-244, 2021.

[J49] M. Qaraqe, S. Althunibat, OS. Badarneh, R. Mesleh**, "Performance analysis of chirp spread spectrum system under mobility scenario"**, Physical Communication, Vol. 43, 2020.

[J50] W. Belaoura, S. Althunibat, K. Qaraqe and K. Ghanem, **"Precoded Index Modulation Based Multiple Access Scheme**," IEEE Transactions on Vehicular Technology, vol. 69, no. 11, pp. 12912-12920, Nov. 2020.

[J51] S. Althunibat, R. Mesleh and K. Qaraqe, **"Secure Index-Modulation Based Hybrid Free Space Optical and Millimeter Wave Links,"** IEEE Transactions on Vehicular Technology, vol. 69, no. 6, pp. 6325-6332, June 2020.

[J52] M. Alhasanat, S. Althunibat, KA. Darabkh, A. Alhasanat, M. Alsafasfeh, **"A Physical-Layer Key Distribution Mechanism for IoT Networks"**, Mobile Networks and Applications, vol. 25, 173–178 (2020).

[J53] S. Althunibat, Z. Altarawneh, R. Mesleh, **"Performance analysis of free space optical–based wireless sensor networks using corner cube retroreflectors",** Transactions on Emerging Telecommunications Technologies. Vol. 30, no. 19, 2019.

[J54] A. Alhasanat, M. Alhasanat, S. Althunibat, M. Alsafasfeh**, "A probabilistic home-based routing scheme for delay tolerant networks",** Wireless Networks, vol. 25, 4037–4048 (2019)

[J55] S. Althunibat, Z.Altarawneh, **"Multi-hop decision gathering scheme for target-detection wireless sensor networks",** IET Communications, Vol. 13, pp. 3278-3284, 2019.

[J56] S. Althunibat et. al., **"A Novel Uplink Multiple Access Technique Based on Index-Modulation Concept,"** *IEEE Transactions on Communications*, vol. 67, no. 7, pp. 4848-4855, July 2019.

[J57] S. Althunibat et. al., **"A hybrid free space optical-millimeter wave cooperative system,"** Optics Communications, Vol. 453, 15 Dec. 2019, 124400.

[J58] S. Althunibat et. al., **"Random Waypoint Mobility Model in Space Modulation Systems,"** *IEEE Communications Letters*, vol. 23, no. 5, pp. 884-887, May 2019.

[J59] S. Althunibat et. al., **"IM-OFDMA: A Novel Spectral Efficient Uplink Multiple Access Based on Index Modulation,"** in *IEEE Transactions on Vehicular Technology*, vol. 68, no. 10, pp. 10315-10319, Oct. 2019.

[J60] S. Althunibat et. al., **"Quadrature Index Modulation Based Multiple Access Scheme for 5G and Beyond,"** IEEE Communications Letters. vol. 23, no. 12, pp. 2257-2261, Dec. 2019.

[J61] S. Althunibat et. al., "**Differential Subcarrier Index Modulation**", IEEE Transactions on Vehicular Technology, vol. 67, no. 8, pp. 7429 – 7439, August 2018.

[J62] S. Althunibat and R. Mesleh, "**Index Modulation for Cluster-based Wireless Sensor Networks**", IEEE Transactions on Vehicular Technology, vol. 67, no. 8, pp. 6943 – 6950, August 2018.

[J63] S. Althunibat et. al., "**A Physical-Layer Security Scheme by Phase-based Adaptive Modulation**", IEEE Transactions on Vehicular Technology, vol. 66, no. 11, pp. 9931- 9942, November 2017

[J64] S. Althunibat and R. Mesleh, **"Enhancing Spatial Modulation System Performance Through Signal Space Diversity**," IEEE Communications Letters, vol. 22, no. 6, pp. 1136- 1139, June 2018.

[J65] R. Mesleh, S. Althunibat and A, Younis, "**Differential Quadrature Spatial Modulation**", IEEE Transactions on Communications, vol. 65, no. 9, pp. 3810-3817, September 2017.

[J66] S. Althunibat et. al., **Physical-Layer Entity Authentication Scheme for Mobile MIMO Systems**", IET Communications, vol. 12, no. 6, pp. 712-718, April 2018.

[J67] O. Badarneh, S. Althunibat, R. Mesleh and Amer Magableh, "**A Unified Performance Analysis of Decode-and-Forward Dual-hop Relaying-Based Wireless Energy Harvesting with Space Modulation**", Transactions on Emerging Telecommunications Technologies, vol. 29, no. 7, July 2018.

[J68] V. Sucasas G. Mantas, S. Althunibat, L. Oliveira, A. Antonopoulos, I. Otung and J. Rodriguez, "**A privacy-enhanced OAuth 2.0 based protocol for Smart City mobile applications",** Computers and Security (Elsevier), vol. 74, pp. 258-274, May 2018.

[J69] S. Althunibat, and R. Mesleh, "**Performance Analysis of Quadrature Spatial Modulation in Two-Way Relaying Cooperative Networks**", IET Communications, vol. 12, no. 4, pp. 466-472, March 2018.

[J70] S. Althunibat and R. Mesleh, "**A Bit to Symbol Mapping Scheme for Spatial Modulation with Partial Channel State Information**", IEEE Communication Letters, vol. 21, no. 5, May 2017.

[J71] S. Althunibat et. al., "**On the Performance of Wireless Sensor Networks with QSSK Modulation with the Presence of Co-Channel Interference",** Telecommunication Systems, vol. 68, no. 1, May 2018.

[J72] S. Althunibat et. al., "**A Low-Interference Decision-Gathering Scheme for Critical Event Detection in Clustered Wireless Sensor Networks**", Physical Communications (Elsevier), vol. 26, pp. 149-155, February 2018.

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