

Ammar Gharaibeh

School of Computing
German Jordanian University
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ResearchGate: researchgate.net/profile/Ammam-Gharaibeh

Education

- Doctor of Philosophy** Sept. 2013–Jan. 2017
Computer Engineering Department
New Jersey Institute of Technology, Newark, NJ, USA
Dissertation Title: *Online Algorithms for Content Caching: An Economic Perspective*
GPA: 3.83
- Master of Science** Jan. 2007–Sept. 2009
Computer Engineering Department
Texas A&M University, College Station, TX, USA
Thesis Title: *A Behavioral Model of a Built-in Current Sensor for IDDQ Testing*
GPA: 3.4
- Bachelor of Science** Sept. 2001–Jan. 2006
Electrical Engineering Department
Jordan University of Science and Technology, Irbid, Jordan
Thesis Title: *Software Defined Radio*
GPA: 86.0, Rank: 1st of 145

Academic Positions

- Associate Professor** May 2021–Present
Department of Computer Engineering
School of Computing
German Jordanian University
- Assistant Professor** Feb. 2017–May 2021
Department of Computer Engineering
School of Computing
German Jordanian University
- Instructor** Sept. 2009–Sept. 2013
Department of Computer Engineering
School of Computing
German Jordanian University
- Teaching Assistant** Mar. 2006–Dec. 2006
Department of Computer Engineering
School of Computing
German Jordanian University

Research Interests

Optimization of wireless sensor network deployment and traffic scheduling; network optimization; AI and deep learning applications in wireless sensor networks; design of online algorithms; energy harvesting; routing in wireless sensor networks; and routing in 5G and beyond.

Publications

Journal Papers

- [1] **A. Gharaibeh**, O. Badarneh, “Probabilistic Line-of-Sight-Based Routing for Multi-Hop THz Networks in Urban Environments”, *Physical Communication*, accepted for publication, Elsevier, 2026, doi: 10.1016/j.phycom.2026.103380
- [2] S. Al-Maliki, **A. Gharaibeh**, M. Rahouti, M. Ruhul Amin, M. Abdallah, J. Qadir, and A. Al-Fuqaha, “Budget-Constrained Online Retrieval-Augmented Generation: The Chunk-as-a-Service Model,” *IEEE Transactions on Artificial Intelligence*, vol. 7, no. 9, pp. 4822–4836, 2026, doi: 10.1109/TAI.2026.3666170
- [3] **A. Gharaibeh**, O. Badarneh, M. Al-Shawaqfeh, and F. Almeahmadi, “Online Charger-Placement Algorithm for Sustainable Energy-Harvesting Wireless Sensor Networks,” *IEEE Open Journal of the Communications Society*, vol. 6, pp. 3502–3512, 2025, doi: 10.1109/OJCOMS.2025.3560310
- [4] H. Al-Obiedollah, H. Bany Salameh, **A. Gharaibeh**, K. Cumanan, Z. Ding, and O. Dobre, “Harvested Power Fairness Based Multi-Carrier NOMA IoT Networks with SWIPT,” *IEEE Wireless Communications Letters*, vol. 12, no. 2, pp. 381–385, 2023, doi: 10.1109/LWC.2022.3227468.
- [5] M. AlShawaqfeh, S. Rababah, A. Hayajneh, **A. Gharaibeh**, and E. Serpedin, “MetaAnalyst: A User-Friendly Tool for Metagenomic Biomarker Detection and Phenotype Classification,” *BMC Medical Research Methodology*, vol. 22, no. 1, pp. 336–350, 2022, doi: 10.1186/s12874-022-01812-5
- [6] M. Al-Shawaqfeh, **A. Gharaibeh**, and R. Mesleh, “Tree-Search-Based Optimal and Suboptimal Low Complexity Detectors for Differential Space Shift Keying MIMO System,” *IEEE Transactions on Wireless Communications*, vol. 22, no. 3, pp. 1980–1991, 2022, doi: 10.1109/TWC.2022.3208079.
- [7] M. Al-Shawaqfeh, **A. Gharaibeh**, and R. Mesleh, “Optimal Low Complexity Detector for Signed-Quadrature Spatial Modulation MIMO System,” *IEEE Journal on Selected Areas in Communications*, vol. 40, no. 10, pp. 2855–2864, 2022, doi: 10.1109/JSAC.2022.3196107.
- [8] I. Hababeh, **A. Gharaibeh**, S. Nofal, and I. Khalil, “An Integrated Methodology for Big Data Classification and Security for Improving Cloud Systems Data Mobility,” *IEEE Access*, vol. 7, pp. 9153–9163, 2019, doi: 10.1109/ACCESS.2018.2890099.
- [9] A. Al-Fuqaha, **A. Gharaibeh**, I. Mohammed, S. Hussini, and A. Khreishah, “Online Algorithm for Opportunistic Handling of Received Packets in Vehicular Networks,” *IEEE Transactions on Intelligent Transportation Systems*, vol. 20, no. 10, pp. 285–296, 2019, doi: 10.1109/TITS.2018.2809917.
- [10] **A. Gharaibeh**, I. Hababeh, and M. Al-Shawaqfeh, “An Efficient Online Cache Replacement Algorithm for 5G Networks,” *IEEE Access*, vol. 6, pp. 41179–41187, 2018, doi: 10.1109/ACCESS.2018.2856913.
- [11] A. Khreishah, S. Shao, **A. Gharaibeh**, M. Ayyash, H. Elgala, and N. Ansari, “A Hybrid RF-VLC System for Energy Efficient Wireless Access,” *IEEE Transactions on Green Communications and Networking*, vol. 2, no. 4, pp. 932–944, 2018, doi: 10.1109/TGCN.2018.2849944.
- [12] A. Khreishah, H. Bany Salameh, I. Khalil, and **A. Gharaibeh**, “Renewable Energy-Aware Joint Caching and Routing for Green Communication Networks,” *IEEE Systems Journal*, vol. 12, no. 1, pp. 768–777, 2018, doi: 10.1109/JSYST.2016.2530695.
- [13] **A. Gharaibeh**, M. Salahuddin, S. Hussini, A. Khreishah, I. Khalil, M. Guizani, and A. Al-Fuqaha, “Smart Cities: A Survey on Data Management, Security and Enabling Technologies,” *IEEE Communications Surveys & Tutorials*, vol. 19, no. 4, pp. 2456–2501, 2017, doi: 10.1109/COMST.2017.2736886.

- [14] **A. Gharaibeh**, A. Khreishah, M. Mohammadi, A. Al-Fuqaha, I. Khalil, and A. Rayes, “Online Auction of Cloud Resources in Support of the Internet of Things,” *IEEE Internet of Things Journal*, vol. 4, no. 5, pp. 1583–1596, 2017, doi: 10.1109/JIOT.2017.2724938.
- [15] A. Khreishah, J. Chakareski, and **A. Gharaibeh**, “Joint Caching, Routing, and Channel Assignment for Collaborative Small-Cell Cellular Networks,” *IEEE Journal on Selected Areas in Communications*, Series on Video Distribution over Future Internet, vol. 34, no. 8, pp. 2275–2284, 2016, doi: 10.1109/JSAC.2016.2577199.
- [16] **A. Gharaibeh**, A. Khreishah, I. Khalil, and J. Wu, “Distributed Online En-route Caching,” *IEEE Transactions on Parallel and Distributed Systems*, vol. 27, no. 12, pp. 345–3468, 2016, doi: 10.1109/TPDS.2016.2547396.
- [17] A. Khreishah, J. Chakareski, **A. Gharaibeh**, I. Khalil, and A. Diabat, “Towards Efficient Operation of Internet Data Center Networks: Joint Data Placement and Flow Control for Cost Optimization,” *Simulation Modelling Practice and Theory*, vol. 64, pp. 83–98, 2016, doi: 10.1016/j.simpat.2015.09.010.
- [18] **A. Gharaibeh**, A. Khreishah, B. Ji, and M. Ayyash, “A Provably Efficient Online Collaborative Caching for Multicell-Coordinated Systems,” *IEEE Transactions on Mobile Computing*, vol. 15, no. 8, pp. 1863–1876, 2016, doi: 10.1109/TMC.2015.2474364.

Conference Papers

- [1] **A. M. Gharaibeh**, A. H. Gharaibeh, “MAPLE: Profit-Aware Online Admission Control for Edge LLM Inference,” accepted in *2026 International Conference on FutureTech (ICFT)*, Jordan, 2026.
- [2] M. Al-Shawaqfeh, A. H. Gharaibeh, B. Maqableh, **A. M. Gharaibeh**, and Y. Al-Badarneh, “Evaluating the Impact of Channel Conditions on Radio Frequency Fingerprint Identification Performance,” in *7th International Conference on Computer Communication and the Internet (ICCCI)*, Japan, 2025, doi: 10.1109/ICCCI65070.2025.11158689.
- [3] **A. Gharaibeh** and H. Al-Obiedollah, “A 2-Competitive Online Algorithm for Mobile Charger Path Planning in Wireless Rechargeable Sensor Networks,” in *International Wireless Communications and Mobile Computing (IWCMC)*, Morocco, 2023, doi: 10.1109/IWCMC58020.2023.10183222.
- [4] **A. Gharaibeh**, O. Badarneh, and M. Al-Shawaqfeh, “Optimizing Charging Station Placement in Energy-Harvesting Wireless Sensor Networks,” in *2nd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)*, Maldives, 2022, doi: 10.1109/ICECCME55909.2022.9987733.
- [5] M. Al-Shawaqfeh, **A. Gharaibeh**, and R. Mesleh, “Structured-Sparse Recovery Detectors for Large-Scale Differential Space Shift Keying MIMO System,” in *2nd European Conference on Communication Systems (ECCC)*, Austria, 2022, doi: 10.1109/ECCS54035.2022.00018.
- [6] F. Shoura, **A. Gharaibeh**, and S. Alouneh, “Optimization of Migration Cost for Network Function Virtualization Replacement,” in *21st International Arab Conference on Information Technology (ACIT)*, Egypt, 2020, pp. 1–7, doi: 10.1109/ACIT50332.2020.9300112.
- [7] M. Nuimat, **A. Gharaibeh**, and A. Khalifeh, “Joint Routing and Channel Assignment for Throughput Maximization in Mobile Wireless Sensor Networks,” in *International Conference on UK-China Emerging Technologies (UCET)*, United Kingdom, 2020, pp. 1–4, doi: 10.1109/UCET51115.2020.9205449.
- [8] O. Mashalh, **A. Gharaibeh**, and A. Khalifeh, “Bandwidth Usage Forecasting and Network Anomaly Detection Based on Neural Network Approach,” in *3rd International Conference on Advances in Artificial Intelligence (ICAAI)*, Turkey, 2019, doi: 10.1145/3369114.3369133.
- [9] M. Alshawaqfeh, **A. Gharaibeh**, and B. Wajid, “A Hybrid Feature Selection Method for Classifying Metagenomic Data in Relation to Inflammatory Bowel Disease,” in *3rd International Conference on Advances in Artificial Intelligence (ICAAI)*, Turkey, 2019, doi: 10.1145/3369114.3371675.
- [10] M. Alshawaqfeh and **A. Gharaibeh**, “Detecting Recurrent Copy Number Variations from aCGH Data via Smoothness-Constrained Models,” in *16th International Multi-Conference on Systems, Signals & Devices*

(SSD), Turkey, 2019, doi: 10.1109/SSD.2019.8893173.

- [11] **A. Gharaibeh**, A. Khreishah, and I. Khalil, “An $O(1)$ -Competitive Online Caching Algorithm for Content Centric Networks,” in *The 35th Annual IEEE International Conference on Computer Communications (INFOCOM)*, USA, 2016, doi: 10.1109/INFOCOM.2016.7524444.
- [12] A. Khreishah, J. Chakareski, I. Khalil, **A. Gharaibeh**, and Y. Jararweh, “Joint Data Placement and Flow Control for Cost-Efficient Data Center Networks,” in *6th International Conference on Information and Communication Systems (ICICS)*, Jordan, 2015, doi: 10.1109/IACS.2015.7103188.
- [13] **A. Gharaibeh**, A. Khreishah, I. Khalil, and J. Wu, “Asymptotically-Optimal Incentive-Based En-Route Caching Scheme,” in *11th International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*, USA, 2014, doi: 10.1109/MASS.2014.84.
- [14] A. Khreishah, I. Khalil, **A. Gharaibeh**, H. Bany Salameh, and R. Alasem, “Joint Caching and Routing for Greening Computer Networks with Renewable Energy Sources,” in *International Conference on Future Internet of Things and Cloud (FiCloud)*, Spain, 2014, doi: 10.1109/FiCloud.2014.26.

Funded Projects

Project Title: Accelerating the Decisions of Data Packet Scheduling in Wireless Sensor Networks Using Deep Learning Approach

Funding Agency: Seed Grant Program, Deanship of Graduate Studies and Scientific Research, German Jordanian University, Jordan

Role: Principal Investigator

Project Period: Oct. 2020–Oct. 2022

Fund Amount: JOD 42,000

Project Title: Building Innovation Infrastructure via Technology Transfer Offices Conducted in Jordanian Higher Education Institutions (BITTCOIN-JO)

Funding Agency: Erasmus+

Role: Project Member

Project Period: Sept. 2019–Sept. 2022

Fund Amount: EUR 846,704

Project Title: The International Master of Science on Cyber Physical Systems (MS@CPS)

Funding Agency: Erasmus+

Role: Project Member

Project Period: Sept. 2019–Sept. 2022

Fund Amount: EUR 999,976.18

Scholarships and Awards

- [1] Research Assistant Scholarship, New Jersey Institute of Technology, Newark, NJ, USA, 2013–2017.
- [2] Graduate Scholarship, master’s scholarship, German Jordanian University, Jordan, 2007–2009.
- [3] Honor List, Faculty of Engineering, Jordan University of Science and Technology, Irbid, Jordan, 2001–2006.
- [4] Tuition Scholarship, Jordan University of Science and Technology, Irbid, Jordan, 2001–2006.

Teaching Experience

Taught Courses

- [1] Network Design and Security (Graduate)
- [2] Wireless Communications (Graduate)

- [3] Network and Communication Systems (Graduate)
- [4] Computer Networks (Course and Lab)
- [5] Operating Systems (Course and Lab)
- [6] Network Protocols
- [7] Computer Security
- [8] Wireless Networks
- [9] Data Communication
- [10] Digital Systems
- [11] Computing Fundamentals (Course and Lab)

Courses and Curriculum Development

- [1] Revised and updated the study plans of the bachelor's and master's programs in the Computer Engineering Department to meet the requirements of the Study Plan Committee at GJU and the Higher Education Accreditation Commission, Jordan, 2024.
- [2] Developed material for several courses in the master's program in Computer Engineering, including Low Power Networks, Mobile Communication Networks, and Network Optimization.

Student Supervision

Master's Students

Thesis Title: Probabilistic Energy-Aware Routing in Energy Harvesting Enabled IoT

Role: Supervisor

Student: Hadeel Al-Shakhatreh

Completion Date: May 2024

Thesis Title: A Robust Wireless Sensor Network Architecture Against Denial-of-Service Attack

Role: Co-Supervisor

Student: Mo'men Al-Manaseh

Completion Date: Jan. 2023

Thesis Title: Optimization of Migration Cost for Network Function Virtualization Replacement

Role: Supervisor

Student: Fadya Alshoura

Completion Date: May 2020

Thesis Title: Joint Routing and Channel Assignment for Throughput Maximization in Mobile Wireless Sensor Networks

Role: Supervisor

Student: Mahmoud Nuaimat

Completion Date: Nov. 2019

Thesis Title: Bandwidth Usage Forecasting and Network Anomaly Detection Based on Neural Network Approach

Role: Supervisor

Student: Omima Al-Mashaleh

Completion Date: Jan. 2019

Bachelor's Students

Thesis Title: Parking System

Role: Supervisor

Students: Mohammad Almasri and Ibrahim Abu-Sahyon

Completion Date: Oct. 2025

Thesis Title: Bitcoin Price Prediction Using Long Short-Term Memory Neural Networks

Role: Supervisor

Student: Muath Alkhasawneh

Completion Date: Oct. 2025

Thesis Title: Traffic Light Scheduling Simulator (TLSS)

Role: Supervisor

Student: Abdullah Al-Fuqaha

Completion Date: July 2025

Thesis Title: Anti-Theft Vehicle Monitoring System

Role: Supervisor

Student: Abdullah Ayesh

Completion Date: July 2025

Thesis Title: ThreatHunter: A Log-Based Complementary Security Monitoring System

Role: Supervisor

Student: Hamzeh El-Faory

Completion Date: Jan. 2025

Thesis Title: Implementation of Energy Aware Routing Protocol Using NS3

Role: Supervisor

Students: Hussam Sakhreyah and Ali Abdelqader

Completion Date: Aug. 2024

Thesis Title: Network Security Implementation Layer Through Voice Biometric

Role: Supervisor

Student: Osama El Shoushi

Completion Date: May 2024

Thesis Title: CropWatch: Adaptive Greenhouse Irrigation for Sustainable Growth

Role: Supervisor

Students: Layal Farwaji, Suhaib Al-Khalidi, and Tuleen Khlaif

Completion Date: May 2024

Thesis Title: Integration of Energy Harvesting in Cluster Head Selection in Wireless Sensor Networks

Role: Supervisor

Students: Hussam Eddin Al-Kharabsheh and Mustafa Al-Momani

Completion Date: Jan. 2024

Thesis Title: Face Detection and Tracking Robot Using an Android Device

Role: Supervisor

Students: Abdullah Nashqai and Adel Hatamleh

Completion Date: Aug. 2022

Thesis Title: Online Payment Application (GoBy)

Role: Supervisor

Student: Ahmad Safi

Completion Date: Aug. 2021

Thesis Title: Computational Modelling of the Coronavirus in Jordan

Role: Supervisor

Student: Adnan Ounis

Completion Date: June 2021

Thesis Title: Encrypting and Decrypting Keyboard Strokes Using Cipher Stream and Block Algorithms Through the Raspberry Pi Board

Role: Supervisor

Students: Osama Abuhussein and Tala Wakileh

Completion Date: May 2020

Thesis Title: Self-Driven Obstacle-Avoiding Robot Through Visual Detection of Objects

Role: Supervisor

Student: Mustafa Zendaki

Completion Date: Oct. 2019

Thesis Title: Smart Irrigation System Based on Fuzzy Logic

Role: Supervisor

Student: AlMeqdad Al-Khazendar

Completion Date: Aug. 2018

Professional Services

Journal and Conference Reviewing

- [1] Reviewer, *IEEE Communication Letters*
- [2] Reviewer, *IEEE Transactions on Intelligent Transportation Systems*.
- [3] Reviewer, *IEEE Transactions on Mobile Computing*.
- [4] Reviewer, *IEEE Access*.
- [5] Reviewer, *IEEE Journal on Selected Areas in Communications*.
- [6] TPC Member and Reviewer, International Conference on FutureTech (ICFT), Amman, Jordan, 2026.
- [7] Reviewer, International Conference on Smart Digital Environment (ICSDE), Rabat, Morocco, 2017.
- [8] TPC Chair and Reviewer, 10th National Technology Parade (NTP 10), Amman, Jordan, 2017.
- [9] TPC Chair, IEEE 88th Vehicular Technology Conference (VTC), 2018.
- [10] TPC Member, IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), 2019.

Administrative Services at German Jordanian University

School of Computing

Acting Dean

Oct. 2025–Present

Computer Engineering Department

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| [1] Head of the Computer Engineering Department | Aug. 2021–Oct. 2025 |
| [2] Head of the Graduate Studies Committee | Aug. 2021–Oct. 2025 |
| [3] Head of the Scientific Research Committee | Aug. 2021–Oct. 2025 |
| [4] Member of the Department Council | Feb. 2017–Aug. 2021 |
| [5] Member of the Graduate Studies Committee | Feb. 2017–Aug. 2021 |
| [6] Member of the Scientific Research Committee | Feb. 2017–Aug. 2021 |

School of Computing

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| [1] Member of the School Council | Aug. 2021–Present |
| [2] Member of the Strategic Plan Committee | Aug. 2022–June 2023 |
| [3] Administrator of several academies | Aug. 2021–Present |
- Role:** Management of courses and examination vouchers offered through the Cisco Academy, Red Hat Academy, Huawei ICT Academy, and EC-Council.

German Jordanian University

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| [1] Member of the Consultation and Training Center Council | Oct. 2025–Present |
| [2] Member of the Deanship of Innovation, Technology Transfer and Entrepreneurship Council | Oct. 2025–Present |
| [3] Member of the Comprehensive Exam Procedure Committee | Mar. 2025 |
| [4] Member of the Student Cases Investigation Committee | Oct. 2021–Oct. 2023 |
| [5] Member of the University Council | Oct. 2021–Oct. 2022 |

Other Administrative Services

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| Member of the Scientific Research Committee, Princess Sumaya University for Technology | Oct. 2024–Sept. 2025 |
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Technical Skills

Operating Systems: Linux, Windows

Programming Languages and Tools: C, C++, MATLAB, Wireshark, network programming, ethical hacking tools, LaTeX

Languages: Arabic (native), English (fluent)