Mohamed Abdallah (Associate Professor)

CONTACT INFORMATION

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EDUCATION

University of Maryland, College Park, MD, USA

Ph.D., Electrical and Computer Engineering, May 2006
Dissertation Title: Beamforming Algorithms for Information Relaying in Dense Wireless Networks.

University of Maryland, College Park, MD, USA

M.S., Electrical and Computer Engineering, Jan 2001
Thesis Title: Resource-efficient Sequential Encoding and Estimation Strategies for Wireless Sensor Networks.

Cairo University, Cairo, Egypt

M.S., Electrical and Computer Engineering, Jan 1999
Thesis Title: Call Admission Control in Wireless Multimedia Networks.

Cairo University, Cairo, Egypt

B.Sc. with honors, Electrical and Computer Engineering, July 1996.

SUMMARY OF ACCOMPLISHMENTS

- **Research outcome:** 5 book chapters, 3 US patents, 67 journal papers, and 122 conference papers (mostly in IEEE journals and conferences). Google Scholar citations: 3425, h-index: 31, i-10 index: 93.
- **Research funding:** Principal investigator (7 Lead PI, 2 Co-Lead PI and 5 PI) in **14** research proposal grants in the total amount of USD 12M.
- **Advising experience:** At HBKU Supervised 3 Postdoc, Graduated 14 M.Sc students 4 Ph.D. student. Currently advising 6 Ph.D. student, 3 M.Sc students, and 1 postdoctoral.Moreover, Graduated and advised several postdoctoral research associates, graduate students at Texas A&M at Qatar, Texas A&M College Station, University of South Florida and Cairo University in their dissertation and theses.
- **Teaching experience:** Taught 17 classes at HBKU with instructor evaluation score 4.1. Eight years experience in teaching a variety of courses in wireless networks and its security aspects, communications and signal processing for both undergraduate and graduate students, and research methods and ethics. Organized and supervised lab sessions in the areas of computer networks, digital electronics and communication theory. Advising undergraduate students in several senior design projects in cooperation with local industry.
- **Professional activities:** Associate Editor for IEEE Transactions on Communications; Associate Editor for IEEE Open Access Journal of Communications, Guest Editor for IEEE Wireless Communication and IEEE IoT Magazie. Track co-chair at the 90th IEEE Vehicular Technology Conference (VTC2019-Fall); Technical program co-chair of the 10th International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom, 2015); Workshop co-chair of the the IEEE WCNC'16 workshop on Optical Wireless Communications; and member of IEEE standard 802.15.7r1 titled 'Short range optical communications'. Technical Committee member for numerous prestigious IEEE conferences.

Professional Experience Academic

Hamad Bin Khalifa University, Doha, Qatar

Assiociate Professor, Division of ICT, College of Science and Engineering **June 19- Present**
Assistant Professor, Division of ICT, College of Science and Engineering **Sept. 16 - June 19**

- Instructed undergraduate and graduate courses including
  - ICT601: Research Methods and Ethics in ICT (F'17,F'18,F'19,F'20,F'21,F'22).
  - ICT701: Research Graduate Seminar (S'18).
  - CYSE727: Wireless Networks and Security (S'17,S'18,S'19,S'20,S'21,S'22)
  - CSE 510: Advanced Algorithms and Data Structures (S'17,S'18)(*co-teaching 40% of class).*
  - CYSE 570: Cybersecurity Policy, management, and IT ethics. (F'16)
  - CPEG 114: Electrical Circuit Theory (F'16)

Texas A& M University at Qatar, Doha, Qatar

Adjunct Associate Professor, Electrical and Computer Eng. Dept. **August. 2022 - Present**

- Fall 2022: Instructed Multiversity Course titled "Special Topics in Smart Grids".
- Research collaboration with regular faculty members in the area of smart grids.

Texas A& M University at Qatar, Doha, Qatar

Associate Research Scientist, Electrical and Computer Eng. Dept. **Oct. 12 - Aug. 16**
Assistant Research Scientist, Electrical and Computer Eng. Dept. **Feb. 11 - Oct. 12**
Postdoctoral Associate, Electrical and Computer Eng. Dept. **Oct. 09 - Feb. 11**

- Conducting and managing research in the area of cellular heterogeneous network, cognitive networks and sensor network with focus on resource allocation, user scheduling, distributed beamforming, cooperative user communication and relaying, detection and estimation, and data fusion algorithms. Recently, I also worked on understanding the physical layers challenges and providing efficient algorithms for novel emerging applications such as visible light and free-space optical communication systems, reconfigurable antenna systems, smart grids, location determination techniques, and cyber security systems.
- Co-advising graduate students on both Qatar and Texas main campuses for their theses, and dissertations.

Cairo University, Giza, Egypt

Associate Professor **July 12 - Aug 16**
Assistant Professor **June 06 - July 12**
(*Was taking a leave of absence since Oct 2009 to work at Texas A&M University at Qatar.*)

- Instructed undergraduate courses including
  - Computer Networks.
  - Analog communication systems.
  - Digital communication systems.
  - Signal processing and linear systems.
  - Probability Theory.
- Instructed graduate courses including
  - Detection and estimation theory.

– Advanced signal processing.
– Advanced digital Communications.

American University at Cairo, Cairo, Egypt
Adjunct Faculty, Electrical Eng. Dept. **Jan. 07 - Sept. 09**

- Spring 2007: Instructed "Computer Networks " course.
- Spring 2008: Instructed "Digital Communications" course.
- Research collaboration with regular faculty members in the area of cognitive networks.

University of Maryland, College Park, Maryland, USA
Research and Teaching Assistant, ECE Department **Jan. 02 - Jun 06**

- Assisted in teaching Estimation and Detection Theory.
- Conducted recitation classes, Graded exams and homework.
- Conducted research in the area of resource-efficient communication and signal processing algorithms for wireless ad-hoc networks.

Cairo University, Cairo, Egypt
Teaching Assistant, ECE Dept. **Sept. 96 - Dec. 98**

- Assisted in teaching undergraduate communication classes.
- Preparing and instructing undergraduate labs in the areas of digital electronics, analog/digital communications and signal processing.

Work Experience - Industrial

Varkon Semiconductors
Principal Systems Engineer **Sept. 08 - Sept. 09**

- Physical layer design and implementation of Digital video broadcasting (DVB) systems using Matlab and C++.

New Bridge Company, Cairo branch, Egypt
Systems Engineer **Sep. 96 - Sep. 97**

- Develop and design of telecommunication WAN and LAN for the Egyptian government and private companies.

InterUniversity Microelectronics Center (IMEC), Leuven, Belgium.
Summer Intern **June 94 - July 94**

- Develop measurement tools for nanotechnology.

Universtat des Saarlandes, Saarbrucken, Germany.
Summer Intern **July 94 - Aug. 94**

- Implement C++ software program for WAN simulation.

Honors and Awards

1. **Best Paper Award:** Abouzohri, Eman and **Abdallah, Mohamed**. Performance of hybrid cognitive RF/VLC systems in vehicle-to-vehicle communications in *2020 IEEE International Conference on Informatics, IoT, and Enabling Technologies (ICIoT)* (2020), 429–434

2. **Best Paper Award:** Elamassie, M., Karbalayghareh, M., Miramirkhani, F., Uysal, M., **Abdallah, Mohamed** and Qaraqe, K. Resource allocation for downlink OFDMA in underwater visible light communications in *2019 IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom)* (2019), 1–6
3. **Research Fellow Excellence Award**: Texas A & M University at Qatar, 2016.
4. **Best Paper Award:** Mohamed Ismail, Islam Bayram, Mohamed Abdallah, Erchin Serpedin, and Khalid Qaraqe "Optimal planning of PEV fast charging stations", *IEEE First Workshop On Smart Grid And Renewable Energy*, Doha, Qatar, Mar. 2015.
5. **Nortel Networks Industrial Fellowship** at University of Maryland, College Park, MD. Awarded for five consecutive years 1999 - 2003. Awarded only to ONE Ph.D. graduate student.
6. **Best Poster Award:** Honors with Distinction (First Place) in University of Maryland Graduate Research Interaction Day (GRID), 2004.
7. **Best Talk Award:** Honors with Distinction (First Place) in University of Maryland Graduate Research Interaction Day (GRID), 2003.
8. **Distinction at M. Sc** (top 1%), Cairo University, Dec 1998.
9. **Distinction with Honor degree at B.Sc.** (top 1 %), Cairo University, July 1996.
10. **Faculty Certificate of Honor**, 1992-1996., Cairo University, Egypt.

Research Grants Awarded

1. **Smart, Connected and Autonomous Vehicle and Energy systems for efficient, safe, secure, and sustainable transportation in metropolitan cities**, TÜBİTAK - QNRF Joint Funding Program

   Mohamed Abdallah (Lead PI), Collaborators: Ala Alfuqaha, Hamid Menouar, Saif AlKuawri, Mansour Karkoub.

   Amount: US$ 600,000 (2022-2025).
2. **AI-Based Next Generation Edge Platform for Heterogeneous Services using 5G Technologies**, NPRP-Standard funded by Qatar National Research Fund.

   Mohamed Abdallah (PI), Collaborators: Aiman Erbad (Lead PI) , Carla Fabiana Chiasserin, Amr Salem

   Amount: US$ 509,051.00 (2021-2024).
3. **Secure Federated Edge Intelligence Framework for AI-driven 6G Applications**, NPRP-Standard funded by Qatar National Research Fund.

   Mohamed Abdallah (Lead PI), Collaborators: Naofal Al-Dhahrir , Mohamed Mahmoud, Tamer Khattab, Amr Salem

   Amount: US$ 509,995.00 (2021-2024).
4. **Multi-layer Cybersecurity and Situational Awareness to Enhance Resiliency in Qatar's Power Grid**, NPRP-Cluster funded by Qatar National Research Fund.

   Mohamed Abdallah (Lead PI for one project), Collaborators: Haitham Abu-Rub (Project Director), Gabriele Oliger, Hussein Alnuweiri, Qutaibah Malluhi, Sunil Khatri, Tingwen Huang

   Amount: US$ 3,204,904.00 (2021-2025).
5. **Mokafaa: Blockchain-based Transparent Rewarding System to Incentivize People to Commit to Confinement using Wireless Location Monitoring Service**, Rapid Response Call (RRC) funded by Qatar National Research Fund.

   Mohamed Abdallah (Lead PI)

   Amount: US$ 70000 (May 2020- Sept 2020).

6. **Electric Grid Failures – Don't Wait Until They Happen**, NPRP-Standard funded by Qatar National Research Fund.

   Mohamed Abdallah (PI), Collaborators: Bo Wang (LPI), Edgar Sanchez-Sinencio, Patrick Mercier, Javier Hernandez Fernandez

   Amount: US$ 600 (2019-2022).

7. **Relay-assisted Visible Light Communication Systems**, Technology Development Fund (TDF) funded by Qatar National Research Fund.

   Mohamed Abdallah (Lead PI), Collaborators: Murat Uysal, Khalid Qaraqe, Ali Gorcin.

   Amount: US$ 130K (2018-2019).

8. **Optical Wireless communications: Complementary Technology for Solving RF Spectrum Congestion in 5G Heterogeneous Networks**, NPRP-Standard funded by Qatar National Research Fund.

   Mohamed Abdallah (PI), Collaborators: Khalid Qaraqe, Khaled B. Letaif, Mohamed-Slim Alouini, Zouheir Rezki, Ahmed Salah, and Mohamed Khairy. Amount: US$ 720K (2016-2019).

9. **Visible Light Communication for Underwater Sensor Networks**, NPRP-Standard funded by Qatar National Research Fund.

   Mohamed Abdallah (Lead PI), Collaborators: Murat Uysal, Costas Georghiades, Boon Ooi and Bassem Shihada.

   Amount: US$ 810K (2016-2019). *Served as a PI after I moved from TAMUQ to HBKU*

10. **A Signal Processing Framework for Secure Monitoring, Power-Line Communications, and Energy Management in Energy Grids**, NPRP-Standard funded by Qatar National Research Fund.

    Mohamed Abdallah (Lead PI), Collaborators: Khalid Qaraqe, Naofal El-Dahrir and Ali Tajer.

    Amount: US$ 1M (2014-2017).

11. **Cognitive Heterogeneous Networks: Interference-aware Resource-efficient Design and Performance Analysis**, NPRP-Standard funded by Qatar National Research Fund.

    Mohamed Abdallah (PI) , Collaborators: Khalid Qaraqe, Mohamed-Slim Alouini, and Mohamed Khairy.

    Amount: US$ 1M (2012 - 2015).

12. **Smarter Smart Phones: Adapting to a Changing Digital Landscape with Reconfigurable Antennas**, NPRP-Standard funded by Qatar National Research Fund.

    Mohamed Abdallah (Co-Lead PI), Collaborators: Jean-Francois Chamberland and Gregory Huff.

    Amount: US$ 1M (2012 - 2015).

13. **Visible Light Communications**, NPRP-Standard funded by Qatar National Research Fund.

    Mohamed Abdallah (Co-Lead PI), Collaborators: Costas Georghiades, Murat Uysal and Harald Haas.

    Amount: US$ 1M (2012 - 2015).

14. **Mobile WiMaX System Design and Analysis**, funded by National Telecommunication Regulatory Authority, Egypt.

    Mohamed Abdallah (PI), Collaborators: Mohamed Khairy, Ahmed Shalash, Mohammed Nafie.

    Amount: US$ 400K (2007 - 2009).

Students and Postdoctoral Fellows-Current

- **Current Postdoctoral Associates**
  1. Abdullatif Albasser (HBKU, 2022-Present)
     Topic: Security Algorithms for Smart Grid Networks.
- **Current Ph.D. Students (Main advisor)**
  1. Danya Saifaldeen (HBKU, Ph.D. Candidate, Expected Graduation May 2023)
     Thesis title: Developing machine learning techniques for hybrid RF/VLC systems.
  2. Noora Al-Maslmani (HBKU, Ph.D. Candidate, Expected Graduation May 2023)
     Thesis title: Towards Secure Federated Learning for IoT using DRL-enabled Reputation Mechanism
  3. Isra Ali (HBKU, Ph.D. Candidate, Expected Graduation May 2023)
     Thesis title: Efficient Runtime Protection for Smart Contracts
  4. Moqbel Ali (HBKU, Expected Graduation May 2025)
     Thesis title: Federated Learning Systems for Wireless Networks
  5. Mohammed Al-Mehdar (HBKU, Expected Graduation May 2026)
     Thesis title: Federated Learning Systems for Wireless Networks
  6. Hassan Sadat (HBKU, Expected Graduation May 2026)
     Thesis title: Federated Learning Systems for Medical Health Systems
- **Current M. Sc. Students (Main advisor)**
  1. Noor Aboueleneen (HBKU, Expected Graduation May 2023)
     Thesis title: Deep Reinforcement Learning for Internet of Drones Networks.
  2. Hadir Teryak (HBKU, Expected Graduation May 2023)
     Thesis title: Hierarchical Federated Learning for Smart Grids Networks.

Students and Postdoctoral Fellows-Former

- **Former Postdoctoral Associates**
  1. Dr. Nourreddine Lasla (HKBU, 2018-2021)
     Topic: Developing Blockchain Technology for peer-to-peer Energy Trading Systems.
  2. Dr. Bekir Ciftler HBKU, 2019-2022
     Topic: Distributed Reinforcement Learrning for Wireless Networks
  3. Dr. Galymzhan Nauryzbayev (HBKU, 2017-2019)
     Topic: Resource optimization for next generation wireless networks.
  4. Dr. Imran Ansari (TAMUQ, Currently working as an Assistant Professor at University of Glasgow)
     Topic: Performance analysis of hybrid RF/FSO systems.
  5. Dr. Islam Baryram (TAMUQ, Currently working as a research scientist at Qatar Environment and Energy Research Institute)
     Topic: Energy management in smart grids and electric vehicles.
  6. Dr. Mohamed El-Kashef (TAMUQ, Currently working as a Research Associate at National Institute of Standards and Technology)
     Topic: Cooperative User Scheduling for Visible light communication.
  7. Dr. Ochirkhand Erdene-Ochir (TAMUQ, Currently working as a Patent Examiner at European Patent Office)
     Topic: Network resilience framework for smart metering systems.
- **Former Ph.D. (Main advisor)**
  1. Abdulmalik Alwarafy (HBKU, Defending Sept 2022)
     Thesis title: Deep Reinforcement Learning for Radio Resource Management in Future AI-Driven HetNets

2. Abdullatif Albasser (HBKU, Defended May 2022)
   Thesis title: Federated Learning Framework over Wireless Edge Network: Optimizing Resources and Learning Algorithms.
3. Hamed Al-Shaibani (HBKU, Defended Feb 2022)
   Thesis title: Privacy Preserved Consortium Blockchain-Based Decentralized Stock Exchange Platform
4. Jaber Al-Khori (HBKU, Defended May 2018)
   Thesis title: Physical layer security for relaying systems in hybrid RF/VLC systems.

- **Former M. Sc. Students (Main advisor)**

1. Maymouna Ezeddin (HBKU, Defended May 2022)
   Thesis title: Efficient Deep Learning-based Detector for Electricity Theft Generation System Attacks Smart Grid.
2. Lina Al-Sahan (HBKU, Defended May 2021)
   Thesis title: Cooperative and Adaptive Spectrum Management System Using Blockchain for 5G NR-U and WiFi Coexistence in the Unlicensed Band.
3. Bader Al-Sada (HBKU, Defended May 2020)
   Thesis title: Secure Scalable Blockchain For Sealed-Bid Auction In Peer-To-Peer Energy Trading
4. Noor AL-Athba (HBKU, Defended May 2020)
   Thesis title: Federated Mimic Learning for Privacy Preserving Intrusion Detection
5. Mohammed Almannai (HBKU, Defended May 2020)
   Thesis title: Poisoning attacks against localization techniques using federated learning.
6. Eman Abouzohri (HBKU, Defended May 2019)
   Thesis title: Performance OF Hybrid Cognitive RF/VLC Systems IN Vehicle-To-Vehicle Communications.
7. Maryam Al-Ammari (HBKU, Defended May 2019)
   Thesis title: Developing blockchain technology for IoT-based energy trading systems
8. Noora Al-Maslmani (HBKU, Defended May 2018)
   Thesis title: Sinkhole Attack Detection in WSN using Swarm Intelligence Optimization
9. Amna Al-Mejali (HBKU, Defended May 2018)
   Thesis title: Voip Security: Dos Flooding-based Attacks Detection
10. Maryam Al-Fehani (HBKU, Defended May 2018)
    Thesis title: The Use of Political Bots for Political Propaganda and Astroturfing.
11. Afaf Al-Sherawi (HBKU, Defended May 2018)
    Thesis title: Electrical Demand Load Forecasting for Qatar using a hybrid model of Artificial Neural Network and Swarm Intelligence Optimization
12. Nour Elhoda Tabet (HBKU, Defended May 2018)
    Thesis title: Multi-Metrics Jamming Detection algorithm for UAV networks
13. Mahmoud El-Achi (HBKU, Defended May 2018)
    Project title: Project Performance Assessment of Ofdm-PLC technology for Smart Meters Deployment in Qatar
14. Aseel Ghazal (HBKU, Defended June 2018)
    Thesis title: Intentions of Twitter Automation: A study of Tweet Sources.
15. Ahmed Elshahraany (Cairo University, Graduated in Aug. 2014)
    Thesis title: On Relay Selection in Multiuser Cognitive Systems.
16. Mostafa ElSayed (Cairo University, Graduated in Aug. 2013)
    Thesis title: Efficient Diversity Techniques for Cognitive Spectrum Sharing Networks.

17. Ahmed Gamal (Cairo University, Graduated in July 2011)
Thesis title: Adaptive Rate Transmission and Power Allocation for Spectrum Sharing in Cognitive Radio Networks.
18. Mohamed Nassar (Cairo University, Graduated in June 2011)
Thesis title:Interference Mitigation Schemes for Advanced MIMO Systems.
19. Mahmoud Sobhy (Cairo University, Graduated in Oct. 2010)
Thesis title: Opportunistic Cognitive Relaying for Wireless Networks: Performance Analysis and Optimization.
20. Mohamed Hany (Cairo University, Graduated in Aug 2009.)
Thesis title: Interference-Minimizing Code Assignment for Cognitive Underlay CDMA Systems.
21. Mohamed Khairy (Cairo University, Graduated in June 2009)
Thesis title: Implementation of Fixed Sphere Decoder for MIMO Systems.

Books Chapters

1. Ahmed Sherif, Ahmad Alsharif, Mohamed M E A Mahmoud, and Mohamed M. Abdallah, "Priority-based and Privacy-preserving Electric Vehicle Dynamic Charging System with Divisible E-Payment," *Smart Cities Cybersecurity and Privacy Book*, Elsevier Press, USA
2. Mohamed Kashef, Muhammad Ismail, Mohamed Abdallah, Khalid A. Qaraqe, and Erchin Serpedin, "Visible Light Communications for Energy Efficient Heterogeneous Wireless Networks," *Energy Management in Wireless Cellular and Ad-hoc Networks*, pp. 299-317, Springer International Publishing, 2016.
3. Khalid A. Qaraqe, Mohamed Abdallah, Muhammad Zeeshan Shakir, "Resource Efficient Design for Heterogeneous Networks (REDHET)," *Excellence and Impact of Research at Texas A&M at Qatar,* QScience, Bloomsbury Publishing UK, 2013.
4. Ayman Elezabi, Mohamed Kashef, Mohamed Abdallah, "A survey of interference mitigation in underlay cognitive radio networks," invited chapter in *Cognitive Radio: Terminology, Technology and Techniques,* Nova Science Publishers.
5. Mohamed S. Khairy, Mohamed M. Abdallah and Serag E. D. Habib, "Efficient Implementation of MIMO decoders," invited chapter in *MIMO Systems, Theory and Applications*, InTech Open Access Publisher.

Patents

1. Hassan Mohamed El-Sallabi, Mohamed Abdallah, Khalid Ali Qaraqe, Gregory H. Huff, and Jean-Francois Chamberland, "Geo-security method and system," U.S. Patent Application 15/286,527, filed April 6, 2017.
2. Hassan Mohamed El-Sallabi, Mohamed Abdallah, Khalid Ali Qaraqe, Gregory H. Huff, and Jean-Francois Chamberland, "Reconfigurable Radio Direction Finder System," U.S. Patent 9,819,081, issued November 14, 2017.
3. Ayman Elezabi, Mohamed Kashef, Mohamed Abdallah, and Mohamed Khairy, "Methods, systems, and computer readable media for interference-minimizing code assignment and system parameter selection for code division multiple access (CDMA) networks," U.S. Patent 8,737,362, issued May 27, 2014.

Publications - Journals

1. Albaseer, A., **Abdallah, Mohamed**, Al-Fuqaha, A., Erbad, A. & Dobre, O. A. Semi-Supervised Federated Learning over Heterogeneous Wireless IoT Edge Networks: Framework and Algorithms. *IEEE Internet of Things Journal* (2022).
2. Alwarafy, A., **Abdallah, Mohamed**, Ciftler, B. S., Al-Fuqaha, A. & Hamdi, M. The frontiers of deep reinforcement learning for resource management in future wireless HetNets: Techniques, challenges, and research directions. *IEEE Open Journal of the Communications Society* (2022).

3. Alwarafy, A., Ciftler, B. S., **Abdallah, Mohamed**, Hamdi, M. & Al-Dhahir, N. DRL-Based Joint RAT Association, Power and Bandwidth Optimization For Future HetNets. *IEEE Wireless Communications Letters* (2022).
4. Alwarafy, A., Ciftler, B. S., **Abdallah, Mohamed**, Hamdi, M. & Al-Dhahir, N. Hierarchical Multi-Agent DRL-Based Framework for Joint Multi-RAT Assignment and Dynamic Resource Allocation in Next-Generation HetNets. *IEEE Transactions on Network Science and Engineering* (2022).
5. Hataba, M., Sherif, A., Mahmoud, M., **Abdallah, Mohamed** & Alasmary, W. Security and Privacy Issues in Autonomous Vehicles: A Layer-Based Survey. *IEEE Open Journal of the Communications Society* **3,** 811–829 (2022).
6. Lasla, N., Al-Sahan, L., **Abdallah, Mohamed** & Younis, M. Green-PoW: An energy-efficient blockchain proof-of-work consensus algorithm. *Computer Networks* **214,** 109118 (2022).
7. Al-Maslamani, N., Ciftler, B. S., **Abdallah, Mohamed** & Mahmoud, M. M. Towards Secure Federated Learning for IoT using DRL-enabled Reputation Mechanism. *IEEE Internet of Things Journal* (2022).
8. Al-Sahan, L., Lasla, N., **Abdallah, Mohamed** & Wang, B. BCSM: Blockchain-based cooperative spectrum management system for 5G NR-U and WiFi coexistence in the unlicensed band. *IET Communications* **16,** 977–987 (2022).
9. Saifaldeen, D. A., Ciftler, B. S., **Abdallah, Mohamed** & Qaraqe, K. DRL-Based IRS-Assisted Secure Visible Light Communications. *IEEE Photonics Journal* (2022).
10. Shehab, M., Ciftler, B. S., Khattab, T., **Abdallah, Mohamed** & Trinchero, D. Deep reinforcement learning powered IRS-assisted downlink NOMA. *IEEE Open Journal of the Communications Society* **3,** 729–739 (2022).
11. Albaseer, A. M., **Abdallah, Mohamed**, Al-Fuqaha, A. & Erbad, A. Fine-grained data selection for improved energy efficiency of federated edge learning. *IEEE Transactions on Network Science and Engineering* (2021).
12. Baza, M., Sherif, A., Mahmoud, M., Bakiras, S., Alasmary, W., **Abdallah, Mohamed** & Lin, X. Privacy-preserving blockchain-based energy trading schemes for electric vehicles. *IEEE Transactions on Vehicular Technology* **70,** 9369–9384 (2021).
13. Cheriet, A., Bachir, A., Lasla, N. & **Abdallah, Mohamed**. On optimal anchor placement for area-based localisation in wireless sensor networks. *IET Wireless Sensor Systems* **11,** 67–77 (2021).
14. Ciftler, B. S., Alwarafy, A. & **Abdallah, Mohamed**. Distributed DRL-based downlink power allocation for hybrid RF/VLC networks. *IEEE Photonics Journal* (2021).
15. Al-Shaibani, H., Lasla, N., **Abdallah, Mohamed** & Bakiras, S. Privacy-Preserving Framework for Blockchain-Based Stock Exchange Platform. *IEEE Access* **10,** 1202–1215 (2021).
16. Younis, M., Lalouani, W., Lasla, N., Emokpae, L. & **Abdallah, Mohamed**. Blockchain-enabled and data-driven smart healthcare solution for secure and privacy-preserving data access. *IEEE Systems Journal* (2021).
17. Alwarafy, A., Al-Thelaya, K. A., **Abdallah, Mohamed**, Schneider, J. & Hamdi, M. A survey on security and privacy issues in edge-computing-assisted internet of things. *IEEE Internet of Things Journal* **8,** 4004–4022 (2020).
18. Baza, M., Nabil, M., Mahmoud, M. M. E. A., Bewermeier, N., Fidan, K., Alasmary, W. & **Abdallah, Mohamed**. Detecting sybil attacks using proofs of work and location in vanets. *IEEE Transactions on Dependable and Secure Computing* (2020).
19. Lasla, N., Al-Ammari, M., **Abdallah, Mohamed** & Younis, M. Blockchain based trading platform for electric vehicle charging in smart cities. *IEEE Open Journal of Intelligent Transportation Systems* **1,** 80–92 (2020).

20. Nauryzbayev, G., **Abdallah, Mohamed** & Al-Dhahir, N. Outage analysis of cognitive electric vehicular networks over mixed RF/VLC channels. *IEEE transactions on cognitive communications and networking* **6,** 1096–1107 (2020).

21. Al-Shaibani, H., Lasla, N. & **Abdallah, Mohamed**. Consortium blockchain-based decentralized stock exchange platform. *IEEE Access* **8,** 123711–123725 (2020).

22. Alsharif, A., Nabil, M., Mahmoud, M. M. & **Abdallah, Mohamed**. EPDA: Efficient and privacy-preserving data collection and access control scheme for multi-recipient AMI networks. *IEEE Access* **7,** 27829–27845 (2019).

23. Anous, N., Ramadan, T., **Abdallah, Mohamed**, Qaraqe, K. & Khalil, D. Planar asymmetric nano-resonators for highly angle tolerant trans-reflective color filters. *OSA Continuum* **2,** 890–904 (2019).

24. Arzykulov, S., Nauryzbayev, G., Tsiftsis, T. A., Maham, B. & **Abdallah, Mohamed**. On the outage of underlay CR-NOMA networks with detect-and-forward relaying. *IEEE Transactions on Cognitive Communications and Networking* **5,** 795–804 (2019).

25. Baza, M., Lasla, N., Mahmoud, M. M., Srivastava, G. & **Abdallah, Mohamed**. B-ride: Ride sharing with privacy-preservation, trust and fair payment atop public blockchain. *IEEE Transactions on Network Science and Engineering* **8,** 1214–1229 (2019).

26. Al-Khori, J., Nauryzbayev, G., **Abdallah, Mohamed** & Hamdi, M. Joint beamforming design and power minimization for friendly jamming relaying hybrid RF/VLC systems. *IEEE Photonics Journal* **11,** 1–18 (2019).

27. Al-Khori, J., Nauryzbayev, G., **Abdallah, Mohamed** & Hamdi, M. Secrecy performance of decode-and-forward based hybrid RF/VLC relaying systems. *IEEE Access* **7,** 10844–10856 (2019).

28. Nabil, M., Sherif, A., Mahmoud, M., Alsharif, A. & **Abdallah, Mohamed**. Efficient and privacy-preserving ridesharing organization for transferable and non-transferable services. *IEEE Transactions on Dependable and Secure Computing* **18,** 1291–1306 (2019).

29. Anous, N., **Abdallah, Mohamed**, Uysal, M. & Qaraqe, K. Performance evaluation of LOS and NLOS vertical inhomogeneous links in underwater visible light communications. *IEEE Access* **6,** 22408–22420 (2018).

30. Anous, N., Ramadan, T., **Abdallah, Mohamed**, Qaraqe, K. & Khalil, D. Impact of blue filtering on effective modulation bandwidth and wide-angle operation in white LED-based VLC systems. *OSA Continuum* **1,** 910–929 (2018).

31. Arzykulov, S., Nauryzbayev, G., Tsiftsis, T. A. & **Abdallah, Mohamed**. On the performance of wireless powered cognitive relay network with interference alignment. *IEEE Transactions on Communications* **66,** 3825–3836 (2018).

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74. Li, Y., Videv, S., **Abdallah, Mohamed**, Qaraqe, K., Uysal, M. & Haas, H. *Single photon avalanche diode (SPAD) VLC system and application to downhole monitoring* in *2014 IEEE Global Communications Conference* (2014), 2108–2113.

75. El-Sallabi, H., **Abdallah, Mohamed**, Chamberland, J.-F. & Qaraqe, K. *A statistical model for delay domain radio channel parameter affected with extreme values* in *2014 International Symposium on Antennas and Propagation Conference Proceedings* (2014), 165–166.

76. El-Sallabi, H., **Abdallah, Mohamed**, Chamberland, J.-F. & Qaraqe, K. *Impact of reconfigurable polarization angle on parameters of a statistical distribution of coherence time of radio channel* in *2014 International Symposium on Antennas and Propagation Conference Proceedings* (2014), 557–558.

77. El-Sallabi, H., **Abdallah, Mohamed** & Qaraqe, K. *Modelling of parameters of Rician fading distribution as a function of polarization parameter in reconfigurable antenna* in *2014 IEEE/CIC International Conference on Communications in China (ICCC)* (2014), 534–538.

78. El-Sallabi, H., **Abdallah, Mohamed** & Qaraqe, K. *On Effective Gain Variability with Antenna Orientation.* in *PIERS Proceedings* (2014).

79. El-Sallabi, H., **Abdallah, Mohamed** & Qaraqe, K. *Similarity Measure of Fading Profiles of Different Antenna States of Reconfigurable Antennas.* in *PIERS Proceedings* (2014).

80. Sarbazi, E., Uysal, M., **Abdallah, Mohamed** & Qaraqe, K. *Indoor channel modelling and characterization for visible light communications* in *2014 16th International Conference on Transparent Optical Networks (ICTON)* (2014), 1–4.

81. Sarbazi, E., Uysal, M., **Abdallah, Mohamed** & Qaraqe, K. *Ray tracing based channel modeling for visible light communications* in *2014 22nd Signal Processing and Communications Applications Conference (SIU)* (2014), 702–705.

82. Tourki, K., Qaraqe, K. A. & **Abdallah, Mohamed**. *Outage analysis of incremental opportunistic regenerative relaying with outdated CSI under spectrum sharing constraints* in *2014 IEEE Wireless Communications and Networking Conference (WCNC)* (2014), 851–856.

83. Yilmaz, M. H., **Abdallah, Mohamed**, Qaraqe, K. A. & Arslan, H. *Random subcarrier allocation with supermodular game in cognitive heterogeneous networks* in *2014 IEEE Wireless Communications and Networking Conference (WCNC)* (2014), 1450–1455.

84. Yilmaz, M. H., M, A. M., Qaraqe, K. A. & Arslan, H. *On the performance of subcarrier allocation techniques for multiuser OFDM cognitive networks with reconfigurable antennas* in *2014 IEEE Global Communications Conference* (2014), 1059–1064.

85. **Abdallah, Mohamed**, Sayed, M., Alouini, M.-S. & Qaraqe, K. A. *Joint random beam and spectrum selection for spectrum sharing systems with partial channel state information* in *2013 Asilomar Conference on Signals, Systems and Computers* (2013), 1468–1472.

86. Ekin, S., **Abdallah, Mohamed**, Qaraqe, K. A. & Serpedin, E. *An investigation of inter-cell subcarrier collisions in OFDM-based cognitive radio networks* in *2013 IEEE 14th Workshop on Signal Processing Advances in Wireless Communications (SPAWC)* (2013), 105–109.

87. Hussain, S. I., **Abdallah, Mohamed** & Qaraqe, K. A. *Power optimization and k th order selective relaying in free space optical networks* in *2013 7th IEEE GCC Conference and Exhibition (GCC)* (2013), 330–333.

88. El-Sallabi, H., **Abdallah, Mohamed**, Chamberland, J.-F. & Qaraqe, K. *On the effect of reconfigurable antenna radiation patterns on outdoor channel characteristics* in *2013 Asilomar Conference on Signals, Systems and Computers* (2013), 936–939.

89. El-Sallabi, H., **Abdallah, Mohamed** & Qaraqe, K. *Channel characterization for indoor communication systems employing reconfigurable antennas* in *2013 Loughborough Antennas & Propagation Conference (LAPC)* (2013), 70–73.

90. El-Sallabi, H., **Abdallah, Mohamed** & Qaraqe, K. *Impact of reconfiguring inclination angle of client's antenna on radio channel characteristics of IEEE802. 11ac system* in *2013 Proceedings of the International Symposium on Antennas & Propagation* **1** (2013), 430–433.

91. **Abdallah, Mohamed**, Sayed, M., Alouini, M.-S. & Qaraqe, K. A. *Interference-aware random beam selection for spectrum sharing systems* in *2012 IEEE Vehicular Technology Conference (VTC Fall)* (2012), 1–5.

92. Ekin, S., Qaraqe, K. A., **Abdallah, Mohamed** & Serpedin, E. *On OFDM-based cognitive radio spectrum sharing systems with random access* in *2012 Wireless Advanced (WiAd)* (2012), 34–38.

93. Hussain, S. I., **Abdallah, Mohamed**, Alouini, M.-S., Hasna, M. & Qaraqe, K. *Best relay selection using SNR and interference quotient for underlay cognitive networks* in *2012 IEEE International Conference on Communications (ICC)* (2012), 4176–4180.

94. Qaraqe, M., **Abdallah, Mohamed**, Serpedin, E. & Alouini, M.-S. *On multiuser switched diversity transmission for spectrum sharing systems* in *2012 7th International ICST Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)* (2012), 106–112.

95. Qaraqe, M., **Abdallah, Mohamed**, Serpedin, E., Alouini, M.-S. & Alnuweiri, H. *Joint multiuser switched diversity and adaptive modulation schemes for spectrum sharing systems* in *2012 IEEE Global Communications Conference (GLOBECOM)* (2012), 1211–1217.

96. Sayed, M., **Abdallah, Mohamed**, Alouini, M.-S. & Qaraqe, K. A. *Multi-spectrum and transmit-antenna switched diversity schemes for spectrum sharing systems: A performance analysis* in *2012 IEEE Globecom Workshops* (2012), 168–173.

97. **Abdallah, Mohamed**, Alouini, M.-S. & Qaraqe, K. A. *Switch and examine transmit diversity for spectrum sharing systems* in *2011 IEEE 12th International Workshop on Signal Processing Advances in Wireless Communications* (2011), 121–125.

98. **Abdallah, Mohamed**, Salem, A., Alouini, M.-S. & Qaraqe, K. A. *Adaptive rate transmission for spectrum sharing system with quantized channel state information* in *2011 45th Annual Conference on Information Sciences and Systems* (2011), 1–5.

99. Bouida, Z., **Abdallah, Mohamed**, Qaraqe, K. A. & Alouini, M.-S. *Spectrally efficient switched transmit diversity for spectrum sharing systems* in *2011 IEEE Vehicular Technology Conference (VTC Fall)* (2011), 1–5.

100. Hussain, S. I., **Abdallah, Mohamed**, Alouini, M.-S., Hasna, M. & Qaraqe, K. *Performance analysis of selective cooperation in underlay cognitive networks over Rayleigh channels* in *2011 IEEE 12th International Workshop on Signal Processing Advances in Wireless Communications* (2011), 116–120.

101. Qaraqe, K. A., Bouida, Z., **Abdallah, Mohamed** & Alouini, M.-S. *Joint switched transmit diversity and adaptive modulation in spectrum sharing systems* in *2011 6th International ICST Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)* (2011), 86–90.

102. Qaraqe, M. K., Bouida, Z., **Abdallah, Mohamed** & Alouini, M.-S. *Interference-Aware Spectrum Sharing Techniques for Next Generation Wireless Networks* in *Qatar Foundation Annual Research Forum Volume 2011 Issue 1* **2011** (2011), CSOS3.

103. Sayed, M., **Abdallah, Mohamed**, Alouini, M.-S. & Qaraqe, K. A. *Dual branch transmit switch-and-stay diversity for underlay cognitive networks* in *2011 IEEE 73rd Vehicular Technology Conference (VTC Spring)* (2011), 1–5.

104. **Abdallah, Mohamed**, Qaraqe, K. & Alouini, M. S. *Adaptive transmission for spectrum-sharing cognitive systems* in *Qatar Foundation Annual Research Forum Volume 2010 Issue 1* **2010** (2010), EEP1.

105. **Abdallah, Mohamed**, Salem, A., Alouini, M.-S. & Qaraqe, K. *Discrete rate and variable power adaptation for underlay cognitive networks* in *2010 European Wireless Conference (EW)* (2010), 733–737.

106. Amin, M., Nafie, M., Fikri, M. & **Abdallah, Mohamed**. *An interference mitigation scheme for multi-user multi-cell MIMO systems* in *2010 International Computer Engineering Conference (ICENCO)* (2010), 40–43.

107. Celebi, H., **Abdallah, Mohamed**, Hussain, S. I., Qaraqe, K. A. & Alouini, M.-S. *Time of arrival based location estimation for cooperative relay networks* in *21st Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications* (2010), 871–875.

108. Elsaadany, M., **Abdallah, Mohamed**, Khattab, T., Khairy, M. & Hasna, M. *Cognitive relaying in wireless sensor networks: Performance analysis and optimization* in *2010 IEEE Global Telecommunications Conference GLOBECOM 2010* (2010), 1–6.

109. Elsaadany, M., Khattab, T., Hasna, M., **Abdallah, Mohamed** & Khairy, M. *Priority-based scheduling for limited energy cognitive relaying* in *2010 17th International Conference on Telecommunications* (2010), 848–852.

110. Qaraqe, K. A., Hussain, S. I., Celebi, H., **Abdallah, Mohamed** & Alouini, M.-S. *An RSS based location estimation technique for cognitive relay networks* in *2010 3rd International Symposium on Applied Sciences in Biomedical and Communication Technologies (ISABEL 2010)* (2010), 1–5.

111. **Abdallah, Mohamed**. *Cooperative beamforming for multi-hop relaying in wireless sensor networks* in *Proceedings of the 2009 International Conference on Wireless Communications and Mobile Computing: Connecting the World Wirelessly* (2009), 660–664.

112. Elezabi, A., Kashef, M., **Abdallah, Mohamed** & Khairy, M. M. *Cognitive interference-minimizing code assignment for underlay CDMA networks in asynchronous multipath fading channels* in *Proceedings of the 2009 International Conference on Wireless Communications and Mobile Computing: Connecting the World Wirelessly* (2009), 1279–1283.

113. Gomaa, A., Nafie, M. & **Abdallah, Mohamed**. *Novel reliability-based hybrid ARQ technique* in *GLOBECOM 2009-2009 IEEE Global Telecommunications Conference* (2009), 1–6.

114. Kashef, M., **Abdallah, Mohamed**, Elezabi, A. & Khairy, M. *System parameter selection for asymmetric underlay cdma networks with interference-minimizing code asssignment* in *2009 IEEE 10th Workshop on Signal Processing Advances in Wireless Communications* (2009), 722–726.

115. Khairy, M. S., **Abdallah, Mohamed** & Habib, S.-D. *Efficient FPGA implementation of MIMO decoder for mobile WiMAX system* in *2009 IEEE International Conference on Communications* (2009), 1–5.

116. El-Saadany, M. S., Shalash, A. F. & **Abdallah, Mohamed**. *Revisiting active cancellation carriers for shaping the spectrum of OFDM-based cognitive radios* in *2009 IEEE Sarnoff Symposium* (2009), 1–5.

117. Khairy, M. S., **Abdallah, Mohamed** & Habib, S.-D. *Efficient FPGA prototyping of fixed sphere decoder for MIMO systems* in *2008 3rd International Design and Test Workshop* (2008), 177–181.

118. **Abdallah, Mohamed** & Papadopoulos, H. *Beamforming algorithms for decode-and-forward relaying in wireless networks* in *Proc. Conf. Inform. Sciences & Systems (CISS)* (2005).

119. Youssef, M., **Abdallah, Mohamed** & Agrawala, A. *Multivariate analysis for probabilistic WLAN location determination systems* in *The Second Annual International Conference on Mobile and Ubiquitous Systems: Networking and Services* (2005), 353–362.

120. **Abdallah, Mohamed** & Papadopoulos, H. C. *Sequential signal encoding and estimation for distributed sensor networks* in *2001 IEEE International Conference on Acoustics, Speech, and Signal Processing. Proceedings (Cat. No. 01CH37221)* **4** (2001), 2577–2580.

121. **Abdallah, Mohamed**, El-Hadidi, M. T. & El-Sayed, K. M. *Effect of user mobility on the QoS parameters for the guard channel policy* in *Proceedings IEEE International Symposium on Computers and Communications (Cat. No. PR00250)* (1999), 409–415.

122. **Abdallah, Mohamed**, El-Hadidi, M. T. & El-Sayed, K. *Performance analysis and estimation of call admission policy parameters for multiple traffic classes in wireless ATM networks* in *1999 IEEE International Conference on Communications* **1** (1999), 404–410.

Selected Presentation and Talks

1. ""Blockchain-based Digital Technologies for Environmental and Energy Management", Eighth Arab-American Frontiers of Science, Engineering, and Medicine Symposium, National Academies of Sciences, Engineering, and Medicine, Nov. 2021.(**Invited Speaker**)
2. "Topology for Robust RF/FSO Backhauling under Random Jamming Attacks and Adversary Weather Conditions", IEEE ComNet 2020, (**Invited Speaker**)
3. "Secrecy Capacity of Hybrid RF/VLC Relaying Networks with Friendly Jamming", Electrical and Computer Engineering Lecture Series, Florida International University (**Invited Talk")**

4. "Secure and Reliable Infrastructure for Dynamic Electric Vehicle Charging in Smart Grid," "Deploying Autonomous Vehicles in Smart Cities," Panel at the International Conference on Computing Sciences and Engineering (ICCSE 2018), Kuwait. (**Invited Talk**).
5. Adaptive Discrete Power and Rate Modulation for Spectrum Sharing Systems, KAUST, May 2010 (**Invited Talk**).
6. It is a fact: Noise can be useful, University of Maryland Research Interaction Day (GRID), Spring 2003, (**Best Talk Award**).

Academic Services

- **University Level**
  - Member of University Academic Programs Assessment Committee, Sept.2021-Present.
  - Member of University Academic Programs and Studies Committee, Sept.2019-Present.
- **College Level**
  - Director of the Undergraduate Studies, Sept.2018-Present.
  - Member of College Council Committee, Sept 2020-Present.
  - Member of Learning and Curriculum committee, Sept.2018-Present.
- **Division Level**
  - Chair of Admission and Student affairs committee, Sept.2018-Present.
  - Member of the Admission committee, Sept.2017-Sept.2018.
  - Chair of Students Affairs committee for the undergraduate computer engineering program, Sept.2017- Sept. 2018.
  - Member of the Curriculum committee, Sept.2017-Sept. 2018.
  - Member of the Faculty Search committee, Sept.2017-Sept. 2018.
  - Academic Advisor for the undergraduate computer engineering program, Sept. 2017-Sept. 2018.

Professional Activities

- **Editorial Board**
  - Associate Editor for IEEE Transactions on Communications, Dec 2015 - Present.
  - Associate Editor for IEEE Open Access Journal of Communications, Sept. 2019 - Present.
  - Guest Editor for IEEE Wireless Communications Magazine, Future Communication Trends towards Internet of Things Services and Applications, Dec 2019.
  - Guest Editor for IoT Magazine, Blockchain-enabled industrial internet of things: Advances, Applications, and Challenges, June 2020
- **Conference and Workshop Organization**
  - Track co-chair: Multiple Antenna Systems and Cooperative Communications, 90th IEEE Vehicular Technology Conference (VTC Fall 2019).
  - Track co-chair: Next Generation Systems and Networks Symposium, 13th International Wireless Communications and Mobile Computing Conference (IWCMC), June 2017.
  - Workshop co-chair: The IEEE Wireless Communications and Networking Conference (WCNC) workshop on Optical Wireless Communications, April 2016.
  - Technical Program co-chair: 10th International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom, 2015).
- **Program Committee Membership**

- IEEE Wireless Communications and Networking Conference (WCNC), 2016, 2019, 2020, 2021, 2022, 2023
- IEEE Personal Indoor and Mobile Radio Communications (PIMRC) 2019, 2020, 2021.
- IEEE Global Communications Conference (Globecom), Wireless Communication, 2014,2015,2016,
- IEEE Vehicular Technology Conference (VTC), Adhoc Networks Symposium track, Montreal, Canada, Fall 2016.
- IEEE International Conference on Communications (ICC), Cognitive Radio Symposium, Malaysia, Dec. 2016.
- The 24th World International Traffic Medicine Association (ITMA) Congress, Doha, Qatar, Nov. 2016.
- IEEE International Conference on Communications (ICC), Cognitive Radio Symposium, Sydney, Australia, May 2014.
- IEEE International Conference on Communications (ICC), Cognitive Radio Symposium, Budapest, Hungary, May 2013.
- IEEE International Conference on Communications (ICC), Cognitive Radio Symposium, Ottawa, Canada, May 2012
- International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom) Stockholm, Sweden, 2012.
- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC 2011), Toronto, Canada.
- International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom), Japan, 2011.
- IEEE International Conference on Telecommunications (ICT), Doha, Qatar, April 2010.
- IEEE Global Communications Conference (Globecom) - AdHoc and Sensor Networks Symposium 2007.

• **Standard Memberships**

- IEEE 802.16m WiMAX standard committee member (2008-2010).
- IEEE standard 802.15.7r1 titled 'Short range optical communications' standard committee member (2015-2017).

• **Journal Reviewing**

- IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Communication Letters, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Signal Processing, IEEE Transactions on Signal Processing letters, and IET Transactions on Signal Processing.

• **Professional Memberships**

- Senior IEEE member.
- IEEE Communication Society.

• **Judge Activities**

- Panelist: NPRP GSRA 2nd cycle program.
- Judge: QNRF Annual research conference (ARC) held in Doha, Nov. 2013.