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Postdoctoral Researcher

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Research Interest

- Mobile edge computing and edge intelligence in B5G/6G, and IoT
- Distributed machine learning and federated learning
- Deep learning optimization

Education

- 2014–2019 **Ph.D. in Electrical Engineering**, *Qatar University*, Doha, Qatar
- 2010–2013 **M.Sc. in Telecommunication Engineering**, *University of Engineering and Technology*, Taxila, Pakistan
- 2005–2009 **B.Sc. in Telecommunication Engineering**, *University of Engineering and Technology*, Peshawar, Pakistan

Research Experience

- 2021–Now **Postdoctoral Research Fellow**, *Qatar Mobility Innovations Center*, *Qatar University*, Doha, Qatar
Research Project 1: Context recognition in crowd monitoring using crowdsourced data. **Research Project 2:** DroneCMS: Flying Infrastructure for Intelligent Crowd Management and Security for Mega Events.
- 2020–2021 **Postdoctoral Research Fellow**, *College of Engineering (CENG)*, *Qatar University*, Doha, Qatar
Research Project: Predictive QoE-Aware and ML for Secure Live Streaming Over the Edge.
- 2016–2017 **Graduate Research Assistant**, *Qatar Mobility Innovations Center*, Doha, Qatar
Research Project: D-COCODI: Scalable Multimedia Multicasting Mobile Solutions for Smartphone Users in Dense Environments.
- 2014–2015 **Graduate Assistant**, *Qatar Transportation and Traffic Safety Center (QTTSC)*, *Qatar University*, Doha, Qatar
Research Project: Traffic congestion mitigation on Doha Expressway.

Fellowships/Grants/Awards

- 2022 Certification of Appreciation / Spot Award, *Qatar Mobility Innovations Center*
- 2021 Post Doctoral Research Award (PDRA), *Qatar National Research Fund*, USD. 200,000
- 2014 Graduate Assistant Award, *Qatar University*, USD. 40,000
- 2009 Best Undergraduate Final Year Project, *University of Engineering and Technology Peshawar*

Teaching and Mentoring

- 2015–Now **Community Mentor**, *Deeplearning.ai on Coursera*, Online
- 2023–Now **Research Mentor**, *Qatar University Young Scientists Center (QUYSC)*, Doha, Qatar

Publications

For updated list of publications, please visit my Google Scholar profile: <https://scholar.google.com/citations?user=BgUrPm8AAAAJ&hl=en>.

Journal Papers

- [1] M. A. Khan, H. Menouar, and R. Hamila, “Visual crowd analysis: Open research problems,” *AI Magazine*, 2023. **(IF: 2.52)**.
- [2] M. A. Khan, H. Menouar, and R. Hamila, “Lcdnet: a lightweight crowd density estimation model for real-time video surveillance,” *Journal of Real-Time Image Processing*, vol. 20, no. 2, p. 29, 2023. **(IF: 3.0)**.
- [3] M. A. Khan, H. Menouar, and R. Hamila, “Revisiting crowd counting: State-of-the-art, trends, and future perspectives,” *Image and Vision Computing*, p. 104597, 2022. **(IF: 4.7)**.
- [4] M. Ishtiaq, N. Saeed, and M. A. Khan, “Edge computing in iot: A 6g perspective,” *arXiv preprint arXiv:2111.08943*, 2021.
- [5] M. A. Khan, R. Hamila, A. Gastli, S. Kiranyaz, and N. A. Al-Emadi, “ML-based handover prediction and ap selection in cognitive wi-fi networks,” *Journal of Network and Systems Management*, vol. 30, no. 4, p. 72, 2022. **(IF: 3.6)**.
- [6] M. A. Khan, H. Menouar, A. Eldeeb, A. Abu-Dayya, and F. D. Salim, “On the detection of unauthorized drones—techniques and future perspectives: A review,” *IEEE Sensors Journal*, vol. 22, no. 12, pp. 11439–11455, 2022. **(IF: 4.3)**.
- [7] M. A. Khan, R. Hamila, A. Erbad, and M. Gabbouj, “Distributed inference in resource-constrained iot for real-time video surveillance,” *IEEE Systems Journal*, vol. 17, no. 1, pp. 1512–1523, 2022. **(IF: 4.4)**.
- [8] M. A. Khan, E. Baccour, Z. Chkirbene, A. Erbad, R. Hamila, M. Hamdi, and M. Gabbouj, “A survey on mobile edge computing for video streaming: Opportunities and challenges,” *IEEE Access*, 2022. **(IF: 3.47)**.
- [9] M. A. Khan, E. Baccour, A. Erbad, R. Hamila, and M. Hamdi, “Code: Computation offloading in d2d-edge system for video streaming,” *IEEE Systems Journal*, 2022. **(IF: 4.4)**.
- [10] D. Unal, M. Hammoudeh, M. A. Khan, A. Abuarqoub, G. Epiphaniou, and R. Hamila, “Integration of federated machine learning and blockchain for the provision of secure big data analytics for internet of things,” *Computers & Security*, vol. 109, p. 102393, 2021. **(IF: 5.6)**.
- [11] M. A. Khan, R. Hamila, N. A. Al-Emadi, S. Kiranyaz, and M. Gabbouj, “Real-time throughput prediction for cognitive wi-fi networks,” *Journal of Network and Computer Applications*, vol. 150, p. 102499, 2020. **(IF: 8.7)**.
- [12] K. Shaaban, M. A. Khan, I. Kim, and R. Hamila, “Queue discharge at freeway on-ramps using coordinated operation of a ramp meter and an upstream traffic signal,” *Procedia Computer Science*, vol. 170, pp. 347–353, 2020.
- [13] K. Shaaban, M. A. Khan, and R. Hamila, “Effect of distance between ramp and upstream signal on ramp meter operation,” *Journal of Traffic and Transportation Management*, vol. 1, no. 2, pp. 43–49, 2020.
- [14] M. A. Khan, R. Hamila, M. S. Kiranyaz, and M. Gabbouj, “A novel uav-aided network architecture using wi-fi direct,” *IEEE Access*, vol. 7, pp. 67305–67318, 2019. **(IF: 3.47)**.

- [15] M. A. Khan, R. Hamila, and M. O. Hasna, "Optimal group formation in dense wi-fi direct networks for content distribution," *IEEE Access*, vol. 7, pp. 161231–161245, 2019. **(IF: 3.47)**.
- [16] K. Shaaban, M. A. Khan, R. Hamila, and M. Ghanim, "A strategy for emergency vehicle preemption and route selection," *Arabian Journal for Science and Engineering*, vol. 44, pp. 8905–8913, 2019. **(IF: 2.9)**.
- [17] M. A. Khan, W. Cherif, F. Filali, and R. Hamila, "Wi-fi direct research-current status and future perspectives," *Journal of Network and Computer Applications*, vol. 93, pp. 245–258, 2017. **(IF: 8.7)**.
- [18] K. Shaaban, M. A. Khan, and R. Hamila, "Literature review of advancements in adaptive ramp metering," *Procedia Computer Science*, vol. 83, pp. 203–211, 2016.

Conference Papers

- [19] I. Mrad, E. Baccour, R. Hamila, M. A. Khan, A. Erbad, and M. Hamdi, "Rl-ceals: Reinforcement learning for collaborative edge assisted live streaming," in *2023 IEEE Symposium on Computers and Communications (ISCC)*, pp. 193–199, 2023.
- [20] M. A. Khan, H. Menouar, and R. Hamila, "Dronenet: Crowd density estimation using self-onns for drones," in *2023 IEEE 20th Consumer Communications & Networking Conference (CCNC)*, pp. 455–460, IEEE, 2023.
- [21] M. A. Khan, R. Hamila, and H. Menouar, "Clip: Train faster with less data," in *2023 IEEE International Conference on Big Data and Smart Computing (BigComp)*, pp. 34–39, IEEE, 2023.
- [22] M. A. Khan, H. Menouar, and R. Hamila, "Crowd density estimation using imperfect labels," in *2023 IEEE International Conference on Consumer Electronics (ICCE)*, pp. 1–6, IEEE, 2023.
- [23] M. A. Khan, H. Menouar, and R. Hamila, "Drones-aided asset maintenance in hospitals," in *2022 2nd International Conference on Computers and Automation (CompAuto)*, pp. 1–5, IEEE, 2022.
- [24] M. A. Khan, H. Menouar, O. M. Khalid, and A. Abu-Dayya, "Unauthorized drone detection: Experiments and prototypes," in *2022 IEEE International Conference on Industrial Technology (ICIT)*, pp. 1–6, IEEE, 2022.
- [25] K. Rahman, S. Mallick, and M. Asif, "Travel time estimation using multivariate regression model," in *Qatar Foundation Annual Research Conference Proceedings*, vol. 2018, p. EEPD1051, HBKU Press Qatar, 2018.
- [26] M. A. Khan, R. Hamila, and K. S. Shaaban, "Mitigation of traffic congestion using ramp metering on doha expressway," in *Qatar Foundation Annual Research Conference Proceedings*, vol. 2016, p. ICTSP2224, HBKU Press Qatar, 2016.
- [27] M. A. Khan, W. Cherif, and F. Filali, "Group owner election in wi-fi direct," in *2016 IEEE 7th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)*, pp. 1–9, IEEE, 2016.
- [28] M. A. Khan, W. Cherif, F. Filali, and R. Hamila, "Realization of dual-hop networks in wi-fi direct and performance evaluation," in *2017 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCom) and IEEE Smart Data (SmartData)*, pp. 552–559, IEEE, 2017.
- [29] M. Shah, M. A. Khan, T. Mahmood, K. Islam, and J. Akbar, "Generation of orthogonally polarized chaotic waveforms for secure optical communication," in *2013 IEEE 9th International Conference on Emerging Technologies (ICET)*, pp. 1–5, IEEE, 2013.

- [30] M. A. Khan and S. Zakiuddin, "Research review of development of novel routing algorithms for mobile ad-hoc networks," in *Eighth International Conference on Digital Information Management (ICDIM 2013)*, pp. 61–66, IEEE, 2013.
- [31] W. Cherif, M. A. Khan, F. Filali, S. Sharafeddine, and Z. Dawy, "P2p group formation enhancement for opportunistic networks with wi-fi direct," in *2017 IEEE wireless communications and networking conference (WCNC)*, pp. 1–6, IEEE, 2017.
- [32] M. A. Khan, S. Zakiuddin, and J. Ahmad, "Cross layer optimization of dynamic source routing protocol using ieee 802.11 e based medium awareness," in *2013 3rd IEEE International Conference on Computer, Control and Communication (IC4)*, pp. 1–6, IEEE, 2013.

Book Chapters

- [33] M. A. Khan and M. A. Ahmadon, "Trends and challenges in mobile edge computing for the next generation massive internet of things." Unpublished book chapter, 2023.

Invited Talks / Tutorials / Interviews

- 2023 **Tutorial**, *Mobile Edge Computing for Massive IoT (MIoT) Systems at 10th IEEE International Symposium on Networks, Computers, and Communications*, Doha, Qatar
- 2023 **Interview**, *Generative AI as an automatic assimilator, processor, and determiner of interactions with people - employees or end-users*, in *Facilitate*, the official IWFM magazine, UK
- 2021 **Interview**, *Artificial Intelligence in FM*, in *Facilitate*, the official IWFM magazine, Mar 2021 Issue
- 2020 **Invited Talk**, *Machine Learning in Mobile Edge Computing - Recent Trends, Opportunities, and Challenges* at *The 2nd International Conference on Machine Learning and Intelligent Systems (MLIS2020)*, October 25-28, 2020, UK
- 2020 **Magazine Article**, *ABC of AI* published in *Facilitate*, the official IWFM magazine, October 2020 Issue, UK
- 2020 **Interview**, *Career Ladder* published in *Facilities Management Journal*, July 2020 Issue

Editorials and Technical Committees

All reviews and TPC memberships can be verified on Web of Science (WoS): <https://www.webofscience.com/wos/author/record/ITT-1012-2023>.

- Journal ○ IEEE Future Direction Newsletter
- Editorial ○ Frontiers in Communication and Networks

- Journal ○ Nature Scientific Reports
- Reviewer ○ IEEE Transactions on Artificial Intelligence (TAI)
- IEEE Communication Magazine (COMMAG)
- IEEE Wireless Communication Magazine (WCM)
- IEEE Communication Standards Magazine (COMSTD)
- IEEE Transactions on Emerging Topics in Computing (TETC)
- IEEE Transactions on Systems, Man, and Cybernetics (SMC)
- IEEE Transactions on Consumer Electronics (TCE)
- IEEE Transactions on Microwave Theory and Techniques (T-MTT)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Communications Surveys and Tutorials (COMST)
- IEEE Internet of Things Journal (IOT)
- IEEE Internet of Things Magazine (IOTMAG)
- IEEE Networking Letters (NL)
- IEEE Systems Journal (ISJ)
- IEEE Sensors Letters (SENSL)
- IEEE Access
- IEEE Open Journal of the Communication Society (OJ-COMS)
- IEEE Open Journal of Vehicular Technology (OJVT)
- IEEE China Communications
- IET Communications
- Elsevier Future Generation Computer Systems (FGCC)
- Elsevier ICT Express (ICTE)
- Elsevier Computers and Electrical Engineering (COMPELECENG)
- Springer Wireless Personal Communication (WPC)
- IET Intelligent Transportation System
- KSII Transactions on Internet and Information Systems

- Conference ○ Tutorial Chair at IEEE Gaming, Entertainment, and Media Conference (GEM) 2023
- Chair ○ Program Co-chair at the 3rd International Conference on Computers and Automation, Paris
- Workshop Co-chair at Sensing, Communication, and Localization in 6G at 6GIIoTT 2022, Fuzhou
- Session chair at 2nd International Conference on Computers and Automation, Paris, France
- Session chair at IEEE Consumer Communications and Networking Conference 2023, Las Vegas

- Conference ○ IEEE International Conference on Communications (ICC 2021-2024)
- TPC ○ IEEE Vehicular Technology Conference (VTC2023-Fall)
- IEEE Consumer Communications and Networking Conference (CNCC 2021-2023)
- International Conference on Consumer Electronics (ICCE Berlin 2023)
- Asia Conference on Computer Vision, Image Processing, and Pattern Recognition (CVIPPR'24)
- IEEE BigData 2020
- IEEE Conference on Technologies for Sustainability (SusTech 2020-2024)
- IEEE Sensors 2020
- IEEE International Conference on Acoustics, Speech & Signal Processing (ICASSP 2020)
- International Conference on Machine Learning and Intelligent Systems (MLIS 2020-23)
- International Workshop on Signal Processing and Machine Learning (WSPML 2020)
- International Conference on Computing Science, Communication and Security.
- IEEE 4th World Forum on Internet of Things (WF-IoT 2018)
- ICTIS2020, CTISC2020, BDML2020.

Examiner/Evaluator

- 2023 External examiner for the senior design project, Qatar University
2022 Judge at IET Presentin10 competition

Supervision and Co-Supervision

- 2023 Co-supervisor of Mr. Samiullah, M.Phil thesis, Abdul Wali Khan University, Mardan, Pakistan

Training/Certifications

- Chartered Engineer, EC UK
- TensorFlow Specialization, Deeplearning.ai
- Deep Learning Specialization, Deeplearning.ai
- Machine Learning, Stanford University at Coursera
- Fundamentals of Accelerated Computing with CUDA Python, Nvidia
- Getting Started with AI and Jetson Nano, Nvidia
- Machine Learning School 2019 organized by BigML and QCRI, Doha, Qatar
- Supervising Doctoral Studies, Epigeum, Oxford University Press
- Certified Peer Reviewer, Elsevier
- Certified Peer Reviewer, Web of Science Academy
- Mentor Community and Training, Coursera
- IBM Maximo, Asset, Inventory, and Work Order Management
- Energy Efficiency and Building Automation Systems, Schneider Electric
- Juniper Networks Certified Internet Associate - JNCIA
- IPv6 Forum Certified Network Engineer, IPv6 Forum
- 4G Mobile and Future Internet, ITU Academy
- Mobile Broadband: LTE/LTE-Advanced, WiMAX and WLAN, ITU Academy
- Future Internet, ITU Academy
- Migration to IPv6, ITU Academy

Conferences Attended

- IEEE Consumer Communications and Networking Conference 2023, Las Vegas, USA
- IEEE 41st International Conference on Consumer Electronics, 2023, Las Vegas, USA
- IEEE International Conference on Big Data and Smart Computing, 2023, Jeju, South Korea
- IEEE 23rd IEEE International Conference on Industrial Technology, 2022, Shanghai, China
- International Conference on Computers and Automation, 2023, Paris, France
- International Conference on Innovation and Technological Advances for Sustainability, 2023, Doha, Qatar.

References

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