

## CONTACT INFORMATION

**Organization:**

Qatar Mobility Innovations Center

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## RESEARCH INTERESTS

Mobile computing, Edge intelligence, Distributed ML,  
Deep learning for computer vision, and In-vehicle net-  
works (IVNs).

## EDUCATION

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

## EXPERIENCE

- **Research Scientist**  
Qatar Mobility Innovations Center, Doha, Qatar. Mar 2024 – Present
- **Postdoctoral Research Fellow**  
Qatar Mobility Innovations Center, Doha, Qatar. Nov 2021 – Feb 2024
- **Postdoctoral Research Fellow**  
Qatar University, Doha, Qatar. Jun 2020 – Oct 2021
- **Graduate Research Assistant**  
Qatar Mobility Innovations Center, Qatar. Jan 2016 – Dec 2016
- **Graduate Assistant**  
Qatar University, Doha, Qatar. Aug 2014 – May 2015

## COURSES TAUGHT

- **STAT-836 Advanced Techniques and Logical Reasoning**  
Abdul Wali Khan University Mardan, Pakistan Fall, 2023
- **STAT-819 Advanced Machine Learning**  
Abdul Wali Khan University Mardan, Pakistan Spring, 2024

## SUPERVISION AND MENTORSHIP

- **Thesis Co-advisor**  
Abdul Wali Khan University, Mardan, Pakistan. 2023 – Present
- **Research Mentor**  
Qatar University Young Scientists Center (QUYSC), Qatar. Jun 2023
- **Research Mentor**  
Qatar Mobility Innovations Center, Qatar. Jun 2023

## GRANTS AND AWARDS

- **Post Doctoral Research Award (PDRA)**

Qatar National Research Fund, USD. 200,000

Mar 2022 - Feb 2024

- **Graduate Assistant Award**

Qatar University, USD. 40,000

Aug 2014 - May 2015

## TALKS

- **Conference Invited Talks:**

- Intelligent Edge for 6G and Massive IoT Systems in the IEEE ICNGN, Bangkok, Thailand.
- Machine Learning in Mobile Edge Computing - Recent Trends, Opportunities, and Challenges in MLIS2020, October 25-28, 2020, UK

- **Conference Tutorials:**

- Mobile Edge Computing for Massive IoT (MIIoT) Systems in 10th IEEE International Symposium on Networks, Computers, and Communications, Doha, Qatar. October 23-26, 2023.

- **Guest Lectures:**

- Network Slicing in 5G at College of Engineering, Qatar University, Doha, Qatar, April 11, 2023.

## PUBLICATIONS

### Journal Articles

1. **M. A. Khan**, H. Menouar and R. Hamila, Accelerating Learning with Fixed Time Budget, *Nature Scientific Reports*, 2024. [Submitted].
2. **M. A. Khan**, H. Menouar and R. Hamila, Crowd Counting at the Edge using Weighted Knowledge Distillation, *IEEE Transactions on Consumer Electronics*, 2024. [Submitted].
3. M. Ishtiaq, N. Saeed and **M. A. Khan**, Edge Computing in IoT: A 6G Perspective, *IT Professional*, 2024. [Accepted].
4. L. Hamad, **M. A. Khan** and A. Mohamed, Object Depth and Size Estimation using Stereo-vision and Integration with SLAM, *IEEE Sensors Letters*, 2024.[Accepted].
5. N. Faiz, A. K. Gardiwal, **M. A. Khan**, and S. Iftikhar, "Dynamic prediction of survival via Landmark method using the asthma prevention trial in young children" *Plos one*. 2023 Nov 30;18(11).
6. **M. A. Khan**, H. Menouar, and R. Hamila, Visual Crowd Analysis - Open Research Problems," in *AI Magazine*, 2023.
7. **M. A. Khan**, H. Menouar, and R. Hamila, "LCDnet: A Lightweight Crowd Density Estimation Model for Real-time Video Surveillance," in *Journal of Real-Time Image Processing.*, 20, 29, 2023.
8. **M. A. Khan**, H. Menouar, and R. Hamila, Revisiting Crowd Counting: State-of-the-art, Trends, and Future Perspectives. in *Image and Vision Computing.*, 129, 104597, 2022.
9. **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," in *IEEE Sensors Journal*, vol. 22, no. 12, pp. 11439-11455, 15 June 15, 2022.
10. **M. A. Khan**, R. Hamila, A. Erbad, and M. Gabbouj, "Distributed Inference in Resource-Constrained IoT for Real-Time Video Surveillance," in *IEEE Systems Journal*, 2022
11. **M. A. Khan**, A. Erbad, R. Hamila and E. Baccour, "CODE: Computation Offloading in D2D-Edge System for Video Streaming" in *IEEE Systems journal*.
12. **M. A. Khan**, E. Baccour, Z. Chkirbene, A. Erbad, R. Hamila, H. Hamdi, and M. Gabbouj, "A Survey on Mobile Edge Computing for Video Streaming: Opportunities and Challenges," in *IEEE Access*, vol. 10, pp. 120514-120550, 2022.

13. **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*. 2022 Oct;30(4):1-21
14. D. Unal, M. Hammoudeh, **M. A. Khan**, A. Abuarqoub, G. Epiphaniou, R. Hamila, "Integration of Federated Machine Learning and Blockchain for the Provision of Secure Big Data Analytics for Internet of Things", *Computers and Security*, Jul. 2021
15. **M. A. Khan**, R. Hamila, N. A. Al-Emadi, M. S. Kiranyaz, and M. Gabbouj, "Real-time Throughput Prediction for Cognitive Wi-Fi Networks", *J. Netw. Comput. Appl.*, vol. 150, pp. 245-258, Sep. 2020.
16. **M. A. Khan**, R. Hamila and M. O. Hasna, "Optimal Group Formation in Dense Wi-Fi Direct Networks for Content Distribution," in *IEEE Access*, vol. 7, pp. 161231-161245, 2019.
17. 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.
18. **M. A. Khan**, R. Hamila, M. S. Kiranyaz, and M. Gabbouj, "A Novel UAV-Aided Network Architecture Using Wi-Fi Direct", in *IEEE Access*, vol. 7, pp. 67305-67318, 2019.
19. 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* 83 (2019): 1-9.
20. **M. A. Khan**, W. Cherif, F. Filali and R. Hamila, "Wi-Fi direct research-Current status and future perspectives", *J. Netw. Comput. Appl.*, vol. 93, pp. 245-258, Sep. 2017.

## Conference Papers

1. K. Shaaban, **M. A. Khan**, H. Menouar, and R. Hamila, Advanced Mobility: Integrating Visible Light Communication and Sensing Technologies, in Intermountain Engineering, Technology, and Computing Conference (i-ETC), Utah, USA, 2024.
2. **M. A. Khan**, H. Menouar, and R. Hamila, Crowd Counting in Harsh Weather using Image Denoising with Pix2Pix GANs, in Thirty-Eighth International Conference on Image and Vision Computing, 2024.
3. **M. A. Khan**, H. Menouar, and R. Hamila, Multimodal Crowd Counting with Pix2Pix GANs, in 19th International Conference on Computer Vision Theory and Applications (VISAPP 2024), Rome, Italy, 2024.
4. L. Hamad, **M. A. Khan**, H. Menouar, F. Filali, and A. Mohamed, Haris: an advanced autonomous mobile robot for smart parking assistance, in 2024 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, USA, 2024, pp. 1-6.
5. **M. A. Khan**, H. Menouar, and R. Hamila, Curriculum for Crowd Counting - Is it Worthy?, " in 19th International Conference on Computer Vision Theory and Applications (VISAPP 2024), Rome, Italy, 2024.
6. I. Mrad, E. Baccour, R. Hamila, **M. A. Khan**, A. Erbad, M. Hamdi, "RL-CEALS: Reinforcement Learning for Collaborative Edge Assisted Live Streaming", in 28th IEEE Symposium Computers and Communications (ISCC) 9 -12 July, Tunis Tunisia.
7. **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), Jeju, Korea, Republic of, 2023, pp. 34-39.
8. **M. A. Khan**, H. Menouar, and R. Hamila, "Crowd Density Estimation Using Imperfect Labels" , 2023 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, USA, 2023, pp. 1-6.
9. **M. A. Khan**, H. Menouar, and R. Hamila, "DroneNet: Crowd Density Estimation using Self-ONNs for Drones" , 2023 IEEE 20th Consumer Communications and Networking Conference (CCNC), Las Vegas, NV, USA, 2023, pp. 455-460.
10. **M. A. Khan**, H. Menouar, O. M. Khalid and A. Abu-Dayya, "Unauthorized Drone Detection: Experiments and Prototypes," 2022 IEEE International Conference on Industrial Technology (ICIT), Shanghai, China, 2022, pp. 1-6.
11. **M. A. Khan**, H. Menouar, and R. Hamila, "Drones-aided Asset Maintenance in Hospitals, in 2nd International Conference on Computers and Automation (CompAuto 2022), August 18-22, 2022, Paris, France
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*, Volume 170, 2020, Pages 347-353, ISSN 1877-0509
13. K. Rahman, S. Mallick, **M. A. Khan**, "Travel Time Estimation using Multivariate Regression Model", In Qatar Foundation Annual Research Conference Proceedings Volume 2018 Issue 1 2018 Mar 21, Vol. 2016, No. 1, p. EEPD1051.

14. W. Cherif, **M. A. Khan**, F. Filali, S. Sharafeddine, Z. Dawy, "P2P Group Formation Enhancement for Opportunistic Networks with Wi-Fi Direct", Proc. IEEE Wireless Commun. Netw. Conf. (WCNC), pp. 1-6, Mar. 2017.
15. **M. A. Khan**, W. Cherif, F. Filali and R. Hamila, "Realization of Dual-Hop Networks in Wi-Fi Direct and Performance Evaluation", 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), Exeter, 2017, pp. 552-559.
16. **M. A. Khan**, W. Cherif, F. Filali, "Group Owner Election in Wi-Fi Direct", Proc. IEEE Annu. Ubiquitous Comput. Electron. Mobile Commun. Conf. (UEMCON), pp. 1-9, Oct. 2016.
17. **M. A. Khan**, R. Hamila and K. Shaaban., "Mitigation of Traffic Congestion Using Ramp Metering on Doha Expressway", In Qatar Foundation Annual Research Conference Proceedings Volume 2016 Issue 1 2016 Mar 21, Vol. 2016, No. 1, p. ICTSP2224.
18. K. Shaaban, **M. A. Khan**, and R. Hamila, "Literature Review of Advancements in Adaptive Ramp Metering", *Procedia Computer Science* 83 (2016): 203-211.
19. M. Shah, **M. A. Khan**, T. Mahmood, K. Islam, and J. Akbar, "Generation of orthogonally polarized chaotic waveforms for secure optical communication" 2013 IEEE 9th International Conference on Emerging Technologies (ICET), Islamabad, 2013, pp. 1-5.
20. **M. A. Khan**, S. Zakiuddin and J. Ahmad, "Cross-layer optimization of dynamic source routing protocol using IEEE 802.11e based medium awareness", 2013 3rd IEEE International Conference on Computer, Control, and Communication (IC4), Karachi, 2013, pp. 1-6.
21. M. S. Khan, S. Bashir, **M. A. Khan**, and K. Asaf, "Design and integration of dual-band textile antenna with high impedance surface", 2013 IEEE 9th International Conference on Emerging Technologies (ICET), Islamabad, 2013, pp. 1-6.
22. **M. A. Khan** and S. Zakiuddin, "Research review of the development of novel routing algorithms for mobile Ad-hoc networks", Eighth International Conference on Digital Information Management (ICDIM 2013), 2013, pp. 61-66

## Book Chapters

1. **M. A. Khan**, and M. A. Ahmadon, "Mobile Edge Computing for the Next Generation Massive Internet of Things" in Evolution of Information, Communication and Computing System, 2023
2. **M. A. Khan**, M. A. Ahmadon, N. A. A. Rauf, A. M. Zaid, A. K. Mahamad, S. Saon, N. S. A. M. Taujuddin, and A. Jamil, "Implementation and simulation of udp client server environment using contiki cooja simulator." 2023.

## PROFESSIONAL SERVICES

### Journal Reviewer

- **Nature:** Scientific Reports
- **IEEE Transactions:** TAI, TMC, TNNLS, TETC, SMC, TCE, TCSVT, TMTT, TDSC
- **IEEE Journals:** COMST, IOT, ISJ, Sens, Access, OJ-COMS, OJ-VT,
- **IEEE Magazines:** COMMAG, WCM, IOTMAG, COMSTD
- **IEEE Letters:** WCL, NL, SENSL
- **IET Journals:** Communication, ITS,
- **Elsevier:** FGCC, ICTE, COMPELECENG
- **Springer:** WPC
- **Wiley:** AIMAG

### Conference Committee Chair/Co-Chair

- **Co-Chair Technical Committee** at IEEE ICFTSS 2024, Kuala Lumpur, Malaysia.
- **Program Co-Chair** at CompAuto 2024, Milan, Italy.
- **Program Co-Chair** at CRET 2024, Milan, Italy.
- **Tutorial Chair** at IEEE GEM 2023, Bridgetown, Barbados.
- **Session Chair** at ITAS 2023, Doha, Qatar.
- **Program Co-Chair** at CompAuto 2023, Paris, France
- **Workshop Co-Chair** at 6GIIoTT 2022, Fuzhou, China
- **Session Chair** at IEEE ICCE, 2023 — Las Vegas, NV, USA
- **Session Chair** at CompAuto 2022, Paris, France

## Conference TPC Member

- IEEE ICC, 2021-2024
- IEEE VTC2023-Fall
- IEEE CCNC, 2021-2025
- ICCE Berlin 2023, ICCE Taiwan 2024
- CVIPPR'24
- IEEE BigData 2020
- IEEE SusTech 2020-2024
- IEEE Sensors 2020
- IEEE ICASSP 2020
- IEEE WF-IoT 2018

## Technical Committees

- IEEE TCCC - CompSoc's Technical Community on Computer Communications
- IEEE TCPAMI - CompSoc's Technical Community on Pattern Analysis and Machine Intelligence
- IEEE MDA-TC - CTSoc's Technical Committee on ML, DL and AI in CE
- IEEE IOT-TC - CTSoc's Technical Committee on Internet of Things
- Internet of Things Community
- IEEE Sensors Council

## TRAININGS AND 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

## REFERENCES

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