Md Tarek Hassan

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Career Objective

PhD researcher at Queen's University Belfast, specializing in reconfigurable intelligent surface (RIS)-enabled wireless communication systems for future 6G networks. Actively conducting research on antenna configuration, propagation-aware modeling, and machine learning-based beam management, with a focus on RIS-assisted localization and sensing.

Work Experience

• **Queen's University Belfast** *Feb 2025 — Present*
Doctoral Researcher Belfast, Northern Ireland, UK

- Reconfigurable Intelligent Surface (RIS) and RIS-Assisted Localization
- Machine Learning-Driven Localization and Integrated Sensing and Communication (ISAC)

• **Queen's University Belfast** *Sep 2025 — Present*
Graduate Teaching Assistant Belfast, Northern Ireland, UK

- Demonstrated laboratory experiments and guided students through practical tasks.
- Assisted students with debugging, measurement setup, circuit/software workflows, and result interpretation.
- Supported lab assessment, feedback, troubleshooting, and safe laboratory practice.

• **Rajshahi University of Engineering & Technology (RUET)** *Dec 2021 — Present*
Lecturer (On Leave) Rajshahi, Bangladesh

- Lesson planning, preparation and research and contact/teaching time with students
- Encouraging personal development via tutorial/pastoral work
- Invigilating examinations and liaising with other professionals/employers
- Arranging work experience placements and attending staff meetings

• **Robi Axiata Limited** *Apr 2019 — May 2019*
Intern in Radio Access Network On site

- Interfaced with LAN and WAN telecommunications operations on secure compatibility and connectivity matters
- Performed system by remote access and coordinated and prepared reports to support operation and planning of telecommunications systems

Education

• **Queen's University Belfast (QUB)** *Feb 2025 – Present*
Doctor of Philosophy (Ph.D.) in Electrical and Electronic Engineering Belfast, United Kingdom

- **Research Title:** Intelligent AI Electromagnetic Environment for Communication and Sensing within 6G
- **Specialization:** 6G and beyond, Machine Learning, Reconfigurable Intelligent Surface (RIS), Localization, Integrated Sensing and Communication (ISAC)

• **Rajshahi University of Engineering & Technology (RUET)** *Sep 2021 – Dec 2024*
Master of Science (M.Sc.) in Electronics and Telecommunication Engineering (ETE) Rajshahi, Bangladesh

- **CGPA:** 3.92 / 4.00
(First Class Honors/Distinction) [First Position]
- **Research Title:** Machine Learning Driven Mobile Edge Computing for Connectivity and QoS in Next Generation Networks
- **Specialization:** Edge Computing, Machine Learning, Beyond 5G/6G

• **Rajshahi University of Engineering & Technology (RUET)** *Jan 2016 – Mar 2021*
Bachelor of Science (B.Sc.) in Electronics and Telecommunication Engineering (ETE) Rajshahi, Bangladesh

- **CGPA:** 3.85 / 4.00
  (First Class Honors/Distinction) [First Position]
- **Research Title:** Radio Resource Management in 5G Heterogeneous Networks
- **Specialization:** 5G, mmWave, Radio Resource Management

PUBLICATIONS

Submitted

1. **M. T. Hassan**, D. Zelenchuk, and M. A. B. Abbasi, "Near-Field 3D User Localization Using Power-Only Fingerprints from a Single 1-Bit Reflective RIS," submitted to the *2027 European Conference on Antennas and Propagation (EuCAP 2027)*, Düsseldorf, Germany, 18–23 April 2027.
2. **M. T. Hassan**, D. Zelenchuk, and M. A. B. Abbasi, "Experimental Diagnosis of Phase Contrast Degradation in a Practical 28 GHz 1-Bit RIS," submitted to the *2027 IEEE 105th Vehicular Technology Conference (VTC2027-Spring)*, Hamburg, Germany, 20–23 June 2027.
3. C. Larmour, F. Kasem, **M. T. Hassan**, D. Zelenchuk, O. Yurduseven, V. Fusco, N. Buchanan, and M. A. B. Abbasi, "Over-the-Air Experimentation of B5G/6G Mobile Device in RIS-Assisted Link," submitted to *IEEE Transactions on Antennas and Propagation*, 2026.

Accepted

1. **M. T. Hassan**, D. Zelenchuk, and M. A. B. Abbasi, "RIS-Aided Near-Field mmWave Localization Under Cross-Link Interference via Beam-Domain ML Fingerprinting," in Proc. *2026 IEEE Global Communications Conference (GLOBECOM)*, Macau, China, 2026.
2. K. Manglani, M. A. B. Abbasi, S. Shahid, **M. T. Hassan**, and D. Zelenchuk, "A Machine Learning-Assisted Beamformer Controller for Channel-Driven Analogue Beamforming," in Proc. *2026 IEEE International Microwave and Antenna Symposium (IMAS)*, Jeddah, Saudi Arabia, 2026.

Published

1. **M. T. Hassan**, D. Zelenchuk, G. Travers, M. A. B. Abbasi, and G. G. Machado, "Experimental Validation of Localisation in RIS-Assisted mmWave Networks," in Proc. *19th IEEE United Conference on Millimetre Waves and Terahertz Technologies (UCMMT)*, Birmingham, U.K., 2026.
2. **M. T. Hassan**, D. Zelenchuk, and M. A. B. Abbasi, "Near Field-Aware UE Localization in RIS-Aided Wireless Networks Through ML-Regressor," in Proc. *2026 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI)*, Detroit, MI, USA, 2026.
3. **M. T. Hassan**, D. Zelenchuk, M. A. B. Abbasi, and I. Munina, "Impact of RIS Size on Machine Learning-Enabled Beam Sweeping for User Localization," in Proc. *20th European Conference on Antennas and Propagation (EuCAP)*, Dublin, Ireland, 2026.
4. **M. T. Hassan**, D. Zelenchuk, M. A. B. Abbasi, and A. Ullah, "Efficient Angular Localization in RIS-Assisted mmWave Network via Learning-Based Estimations," in Proc. *2026 32nd International Conference on Telecommunications (ICT)*, Thessaloniki, Greece, 2026.
5. **M. T. Hassan**, D. Zelenchuk, and M. A. B. Abbasi, "Machine Learning-Driven User Localization in RIS-Assisted Wireless Systems," 20th RIA/URSI Research Colloquium on Radio Science and Communications, Royal Irish Academy, Dublin, Ireland, arXiv:2510.23908, 2025.
6. **M. T. Hassan** and M. K. Hosain, "A Comprehensive Analysis of KNN and Order Preserving Techniques for Offloading Efficiency in MEC Networks," in Proc. *2024 27th International Conference on Computer and Information Technology (ICCIT)*, Cox's Bazar, Bangladesh, 2024, pp. 1334-1338.
7. **M. T. Hassan** and M. K. Hosain, "Optimization of Computation Offloading in Mobile-Edge Computing Networks with Deep Reinforcement Approach," in Proc. *2024 IEEE International Conference on Communication, Computing and Signal Processing (IICCCS)*, Asansol, India, 2024, pp. 1-6.
8. A. Uz Zaman, **M. T. Hassan** and A. S. M. Badrudduza, "A Deep Reinforcement Learning Approach for Power Allocation in 5G Homogeneous Network Scenario," in Proc. *2024 IEEE International Conference on Power, Electrical, Electronics and Industrial Applications (PEEIACON)*, Rajshahi, Bangladesh, 2024, pp. 948-953.
9. M. Rahman Jony, **M. T. Hassan** and K. Hosain, "A Coastal Area Based Statistical Channel Modeling for 5G Millimeter Wave (mmWave) Heterogeneous Networks," in Proc. *2024 IEEE International Conference on Power, Electrical,*

Electronics and Industrial Applications (PEEIACON), Rajshahi, Bangladesh, 2024, pp. 1-6.

10. V. Roy, **M. T. Hassan**, M. K. Hosain, and L. Islam, "Analyzing Spatial Consistency and Human Blockage in mmWave Channel Modeling within Metrorail Scenarios in Next Generation Networks," in Proc. *2024 IEEE International Conference on Power, Electrical, Electronics and Industrial Applications (PEEIACON)*, Rajshahi, Bangladesh, 2024, pp. 272-277.
11. L. Islam and **M. T. Hassan**, "Performance Evaluation of Vehicle-Centered Traffic Management Using Fog Computing-Based Wireless Network," in Proc. *2023 26th International Conference on Computer and Information Technology (ICCIT)*, Cox's Bazar, Bangladesh, 2023, pp. 1-6.
12. M. R. Hassen, **M. T. Hassan** and M. R. Imrose, "Multi RIS-Integrated MIMO Wireless Communication: End-to-End (E2E) Learning Performance Across Diverse Network Scenarios," in Proc. *2023 26th International Conference on Computer and Information Technology (ICCIT)*, Cox's Bazar, Bangladesh, 2023, pp. 1-6.
13. M. A. Hasan, **M. T. Hassan** and F. Haque, "A Deep Learning-Based Efficient Beamspace Estimation Approach in Millimeter-Wave Massive MIMO Systems," in Proc. *2023 6th International Conference on Electrical Information and Communication Technology (EICT)*, Khulna, Bangladesh, 2023, pp. 1-6.
14. M. R. Imrose, **M. T. Hassan** and M. R. Hassen, "A Comprehensive Study on Statistical Channel Modeling for Outdoor-to-Indoor (O2I) Penetration Concern of 5G mmWave Access Networks," in Proc. *2023 6th International Conference on Electrical Information and Communication Technology (EICT)*, Khulna, Bangladesh, 2023, pp. 1-6.
15. M. R. Imrose, **M. T. Hassan**, M. R. Hassen, and M. M. Mowla, "A Statistical Investigation of Spatial Consistency and Human Blockage Consideration Based mmWave Channel Modeling for 5G Back-Haul Networks," in Proc. *2023 International Conference on Electrical, Computer and Communication Engineering (ECCE)*, Chittagong, Bangladesh, 2023, pp. 1-6.
16. **M. T. Hassan** and M. M. Mowla, "A Novel MAC Scheduling Approach for Mobility-Based 5G Millimeter Wave Networks," in Proc. *2022 4th International Conference on Electrical, Computer and Telecommunication Engineering (ICECTE)*, Rajshahi, Bangladesh, 2022, pp. 1-4.
17. **M. T. Hassan** and M. Munjure Mowla, "An Efficient Proportional Fair MAC Scheduling for Resource Allocation in 5G Millimeter Wave Networks," in Proc. *2022 25th International Conference on Computer and Information Technology (ICCIT)*, Cox's Bazar, Bangladesh, 2022, pp. 276-281.
18. **M. T. Hassan** and M. M. Mowla, "Investigation of TCP Performance in 5G mmWave Networks," in Proc. *2020 IEEE Region 10 Symposium (TENSYMP)*, Dhaka, Bangladesh, 2020, pp. 1688-1691.

Skills

- **Programming Languages:** Python, MATLAB, C++, C
- **Web Technologies:** HTML5, CSS3, Bootstrap, JavaScript, PHP, WordPress
- **Database Systems:** MySQL, Firebase
- **Data Science & Machine Learning:** Scikit-learn, Pandas, Matplotlib, TensorFlow, Keras, NumPy
- **Specialized/Research Area:** 5G/6G, Wireless Communication, mmWave, Reconfigurable Intelligent Surface
- **Mathematical & Statistical Tools:** GNU Octave, MATLAB, R
- **Other Tools & Technologies:** CST Studio, NS-3, Anaconda, Jupyter Notebook, LaTeX

Projects

• Design and Development of IoT Based Swarm Intelligence System for Environmental Sustainability *Dec 2022 — Sep 2024*

- Developed a distributed IoT monitoring system using **Python**, **Arduino**, and wireless sensor networks.
- Implemented swarm intelligence algorithms, including Particle Swarm Optimization, for decentralized sensor-node decisions.
- **Tech Skills:** Python, Arduino, MQTT, Swarm Intelligence, Sensor Integration

• Advanced Mobile Phone Controlled Electrical Appliances *Nov 2017 — Feb 2018*
[**GitHub**]

- Designed a mobile phone-based system for remote electrical appliance control.
- Developed microcontroller logic using embedded C for practical low-cost switching.

- **Tech Skills:** Electronics, Arduino, Atmel Studio

• **Automated & Manual Amplitude Modulation (AM) Modulator & Demodulator** *Dec 2018 — Jul 2019*
[**GitHub**]

- Designed automated and manual AM modulator and demodulator circuits.
- Built audio, carrier, filtering, modulation, and demodulation circuit stages.
- **Tech Skills:** Electronics, Arduino, Passive Electric Filters, Modulator and Demodulator

Honors and Awards

• **Fully Funded UKRI–EPSRC PhD Scholarship** *2025 — 2028*
Queen's University Belfast

- Doctoral scholarship funded by UK Research and Innovation (UKRI) through the Engineering and Physical Sciences Research Council (EPSRC)

• **Most Impactful Thesis Award** *Mar 2021*
RUET

- B.Sc. Thesis Award
- 3 good conferences based on the thesis

• **Student of the Year** *Nov 2018*
RUET

- Awarded for the highest results in a year
- Got the medal and certification

• **University and Board Scholarships** *2008 — 2022*
RUET and Bangladesh Government

- Undergrad Scholarship in RUET
- Bangladesh Government Scholarship in HSC, SSC and JSC Examination

• **Travel Grants** *2022 - 2026*
Conference Travel Support

- EEECS School Travel Grant for 2026 IEEE GLOBECOM, Macau, China.
- EEECS School Travel Grant for 2026 IEEE AP-S/URSI, Detroit, Michigan, USA.
- Telco Renata Travel Grant 2024 for CTTC, Barcelona, Spain.
- Travel support for ICCIT 2024, ICCIT 2023, ICECTE 2022, IICCCS 2024, and EICT 2023.

Leadership Experience

• **Student Ambassador** *3 Oct 2026 — Present*
Queen's University Belfast

- Welcomed and guided prospective students and visitors
- Led building tours across key EEECS facilities
- Supported event coordination and visitor management

• **General Secretary** *Feb 2020 — March 2021*
Joypurhat Zilla Association

- Organized student's farewell and fresher's reception program in the association
- Arranged the inter college competition in the zilla

• **Electronic Society of RUET** *Feb 2017 — October 2017*
Rajshahi University of Engineering & Technology

- Published the information to the students of the upcoming events
- Arranged the necessary management for the keynote speaker and the organizing body

Certifications

- **Cisco:** CCNA: Routing and Switching *Feb 2020*
- **IBM:** IBM Data Science Professional Certification *Jul 2020*
- **University of Michigan:** Python For Everyone Specialization *Sep 2020*

Additional Information

Languages: English (Proficiency level), Hindi (Intermediate), Bangla (Native)
Interests: Traveling, Documentation, Watching Films, Cooking