Abdul Rehman
(Ph.D., Postdoc)



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Short Biography

Dr. Abdul Rehman is a Postdoctoral Research Associate at the Hyper-Connectivity Convergence Technology Research Center at Kyungpook National University (KNU) in Daegu, South Korea. He also served as an Assistant Professor at the University of Central Punjab, Lahore, Pakistan. His career includes several academic experiences. He received his bachelor's degree in mathematics from the International Islamic University in Islamabad, Pakistan. He completed his Integrated Ph.D. in Computer Science and Engineering at KNU, South Korea. His research interests encompass a wide range of topics in the field of computer science and engineering. Specifically, he focuses on Deep Learning, Machine Learning, and Data Science, exploring the applications of these techniques in various domains. His expertise extends to Computer Vision, (S)IoT, and Data Analysis. Dr. Rehman is also interested in Complex Network Navigation, Mathematical Modeling, and Big Data Analytics, aiming to develop innovative solutions to complex problems in these areas. He was honored with the KINGS Scholarship for his Integrated Ph.D. program at KNU and was further recognized with the prestigious "Outstanding Researcher" Award from the School of Computer Science and Engineering. Dr. Abdul Rehman is a guest editor and Editorial Board member for various international journals, including Digital Technologies Research and Applications. Additionally, Dr. Rehman has contributed to numerous international conferences as a session chair, including the 6th International Conference on Artificial Intelligence in Information and Communication (ICAIIC 2024), the 11th International Conference on Orange Technology & the 19th International Conference on Information Hiding and Multimedia Signal Processing (ICOT-2023 & IIHMSP-2023), the 5th International Conference on AI in Information and Communication (ICAIIC 2023), International Conference on Smart Computing and Applications (ICSCA 2023), and the 3rd International Conference on Artificial Intelligence and Machine Learning (CAIML 2022). Furthermore, he was the publication chair for the 8th International Conference on Orange Technology (ICOT-2020).

Research Interests

Deep Learning	Machine Learning	Data Science
Computer Vision	(S)IoT	Data Analysis
Complex Network Navigation	Mathematical Modeling	Big Data

Experience

March, 2022 - Present	**Postdoctoral Research Associate** in Hyper-connectivity Convergence Technology Research Center, **Kyungpook National University**, Daegu, South Korea
November, 2021 - February, 2022	**Postdoctoral Research Associate** in Software Technology Research Center, **Kyungpook National University**, Daegu, South Korea
March, 2021 - August, 2021	**Assistant Professor** **University of Central Punjab**, Lahore, Pakistan
March, 2017 - December, 2020	**Research Assistant** at Connected Computing and Media Processing Lab, **Kyungpook National University**, Daegu, South Korea
September, 2016 - February, 2017	**Teaching Assistant** to Porf. Anand Paul at School of Computer Science and Engineering, **Kyungpook National University**, Daegu, South Korea

Project Participation

March 2023 - May 2024	**Postdoctoral Researcher** in Software Reliability Improvement through Deep Code Learning-based Early Error Detection and Automatic Correction
December 2022 - February 2023	**Full-time Researcher** in Regional Intelligence Innovation Human Resource Development (Kyungpook National University)
March 2022 - November 2022	**Postdoctoral Researcher** in Software Reliability Improvement through Deep Code Learning-based Early Error Detection and Automatic Correction
November 2021 - February 2022	**Postdoctoral Researcher** in Pattern-based Safety Verification Framework for Open IoT Operating System
November 2021 - February 2022	**Postdoctoral Researcher** in Software Disaster Research Center
September 2020 - February 2021	**Student Researcher** in Intelligence Convergence Software Education Research Group (BK Participation Student)
September 2019 - February 2020	**Student Researcher** in Energy Transition and Smart Decline Support Platform for Shrinking Cities
March 2017 - December 2018	**Student Researcher** in Emergency Energy Self-Sufficiency System for Central Buildings in Metropolitan Areas during Blackouts
June 2015 - May 2016	**Student Researcher** in Protein Molecular Geometry Structure Generation and Application
March 2015 - August 2020	**Student Researcher** in Smart Life Realization through SW Manpower Training Project Team (BK Participation Student)

Courses Taught

Graduate Level	**Data Science | Internet of Things | Data mining**
Undergraduate Level	**C, C++ | Data Structure | Design and Analysis of Algorithms**
	Calculus | Linear Algebra | Probability and Statistics

Educational

March, 2015 - Feb. 2021	**MS Combined Ph.D.** in Computer Science and Engineering, **Kyungpook National University**, Daegu, South Korea **Dissertation Title:** "A Class-Based Information Search Algorithm in Individual's Small World of Social Internet of Things" **Advisor**: Prof. Dr. Anand Paul
Sep. 2010 - Feb. 2013	**Master of Science (M.Sc)** in Mathematics, **International Islamic University**, Islamabad, Pakistan

Honors

International Journal, Conferences & Workshops Chairing Services:

1. **Guest Editor**, Digital Technologies Research and Application (Special Issue: Available Online)
2. **Conference Session Chair**, The 6^{th} International Conference on Artificial Intelligence in Information and Communication(ICAIIC 2024)
3. **Conference Session Chair**, The 11^{th} International Conference on Orange Technology & The 19^{th} International Conference on Information Hiding and Multimedia Signal Processing (ICOT-2023 & IIHMSP-2023)
4. **Guest Editor**, Electronics MDPI (Special Issue: Closed)
5. **Conference Session Chair**, The 5^{th} Int. Conf. on AI in Information and Communication (ICAIIC 2023)
6. **Conference Session Chair**, International Conference on Smart Computing and Applications (ICSCA 2023)
7. **Program Committee Member**, 3^{rd} Int. Conference on Artificial Intelligence and Machine Learning (CAIML 2022)
8. **Editorial Board Member**, Journal of Intelligent Communication

9. **Editorial Board Member**, Journal of Multidisciplinary Sciences
10. **Editorial Board Member**, Acta Scientific Computer Sciences
11. **Publication Chair**, The 8^{th} International Conference on Orange Technology (ICOT-2020)

Peer Reviewer of International Journals: incomplete list of Verified Reviewer @ Publons

IEEE Internet of Things Journal	IET Wireless Sensor Systems	IEEE Access
Sensors	Entropy	Applied Sciences
Information	Sustainability	Electronics

Awards

1. Outstanding Research Achievement Award (CSE-RA-2019-10).
2. Best Presenter Award ICEET'20, Lahore, Punjab, Pakistan (Feb. 22, 2020).
3. KNU International Graduate scholarship (KINGS) for Doctoral Program, Mar. 2015- Feb. 2019.
4. Brain Korea 21 plus (BK21+) Scholarship, Mar. 2015 - Feb. 2021.

Technical Skills

Programming	C/C++, Python, MATLAB, R
Simulators	Gephi, NetworkX, Cytoscape, Nodexl.
Operating Systems	Mac OS, Linux.
Tools	Visual Studio, PyCharm, SIMULINK, etc.
Misc.	Sigmaplot, Origin-Pro, Latex, Mendeley, Endnote, Zetero etc.

Leadership and Management

April 2019 - March 2020	Pakistan Students and Scholars Association, South Korea **Role:** Joint Secretary
Sep 2017 - Feb 2020	Connected Computing and Media Processing Lab, KNU, Daegu, South Korea **Role:** Lab Head

Publications

Cumulative Impact Factor: (as per JCR, 2020): **73.985+**, **Google Citations: 1005+**, **Research Gate** (RG) Score: **17.67**

Patent Applications:

1. **Abdul Rehman**, and Anand Paul, "Trustworthy Intelligent Fire Detection system by Exploiting Social Internet of Things", Korean Patent Application Number: C-2020-016860, Date: 2020-05-25.
2. **Abdul Rehman**, and Anand Paul, "Class Based Information Searching Algorithm in Social Internet of Things Environment", Korean Patent Application Number: C-2020-016861, Date: 2020-05-25.
3. **Abdul Rehman**, and Anand Paul, "An application for liquefied petroleum gas cylinder Leakage monitoring and consumption indicator for home kitchen", Korean Patent Application Number: C-2020-017411, Date: 2020-05-29.

Journal Articles: (incomplete list)

4. Muhammad Ali Ilyas, **Abdul Rehman**, Assad Abbas, Dongsun Kim, and Nasro Min Allah, "Fake News Detection on Social Media using Ensemble Methods," Computers, Materials & Continua, Impact Factor= (3.860)
5. Amber Murtaza, **Abdul Rehman**, Saif Ur Rehman Malik, Gouher Ahmed, Assad Abbas, Muhammad Adnan Khan, "A Model-Based Approach to Enhance the Communication Between the Participants of Collaborative Business Processes," IEEE Access, Impact Factor (3.476)

6. **Abdul Rehman**, Faisal Saeed, M. Mazhar Ullah Rathore, Anand Paul, and Jae Mo Kang, "Smart City Fire Surveillance: A Deep State-Space Model with Intelligent Agents," IET Smart Cities, Impact Factor= (3.34)

7. **Abdul Rehman**, Dongsun Kim, and Anand Paul, "Convolutional Neural Network Model for Fire detection in Real-time Environment," Computers, Materials & Continua, Impact Factor= (3.860)

8. Tahir Sher, **Abdul Rehman**, Dongsun Kim, and Imran Ihsan, "Exploiting Data Science for Measuring the Performance of Technology Stocks", Computers, Materials & Continua, Impact Factor= (3.860)

9. Farah Batool, **Abdul Rehman**, Dongsun Kim, Assad Abbas, Raheel Nawaz, and Tahir Mustafa Madni, "A Query-Based Greedy Approach for Authentic Influencer Discovery in SIoT", Computers, Materials & Continua, Volume 74, no. 3, pp. 6535 - 6553, Publication date. 2023. Impact Factor= (3.860)

10. Tahir Sher, **Abdul Rehman**, and Dongsun Kim, "COVID-19 Outbreak Prediction by Using Machine Learning Algorithms", Computers, Materials & Continua, Volume 74, no. 1, pp. 1561 - 1574, Publication date. 2022. Impact Factor= (3.860)

11. Rahim Khan, Qiang Yang, Inam Ullah, Ateeq Ur Rehman, Ahsan Bin Tufail, Alam Noor, **Abdul Rehman**, and Korhan Cengiz, "3D convolutional neural networks based automatic modulation classification in the presence of channel noise", Publication date. 2021. Impact Factor= (1.345)

12. Awais Asif, Ekrem Savas, Hussain AlSalman, Muhammad Arshad, Abdu Gumaei, and **Abdul Rehman**, "Fixed point of rational contractions and its application for secure dynamic routing in wireless sensor networks", Security and Communication Networks, Volume 2021, pp. 1 - 10, 2021. doi: 10.1155/2021/9939546. Impact Factor= (1.968)

13. Awais Asif, Hassen Aydi, Muhammad Arshad, **Abdul Rehman**, and Usman Tariq, "Picture Fuzzy Ideals Mathematics", Volume 2020, pp. 176-185, 2020. doi: 10.1155/2020/8857459. Impact Factor= (1.555)

14. **Abdul Rehman**, Anand Paul, Awais Ahmad, "A Query based Information search in an Individual's Small World of Social Internet of Things", Computer Communications, Volume 163, pp. 176-185, 2020. doi: 10.1016/j.comcom.2020.08.027. Impact Factor=(5.047).

15. Jehangir Arshad, **Abdul Rehman**, Ateeq Ur Rehman, Rehmat Ullah and Seong Oun Hwang, "Spectral Efficiency Augmentation in Uplink Massive MIMO Systems by Increasing Transmit Power and Uniform Linear Array Gain", Sensors, vol. 20, no. 17, pp. 1-15, 2020. Impact Factor= (3.847)

16. Ateeq Ur Rehman, Rizwan Ali Naqvi, **Abdul Rehman**, Muhammad Tariq Sadiq,and Dildar Hussain, "A Trustworthy SIoT Aware Mechanism as an Enabler for Citizen Services in Smart Cities", Electronics. vol. 9, Issue 6, pp. 918, 2020, doi: https://doi.org/10.3390/electronics9060918, Impact Factor= (2.69)

17. **Abdul Rehman**, Anand Paul, Awais Ahmad, and Gwanggil Jeon, "A novel class based searching algorithm in small world internet of drone network", Computer Communications, vol. 157, pp. 329-335, 2020, doi: 10.1016/j.comcom.2020.03.040. Impact Factor= (5.047).

18. Malik Junaid Gul, **Abdul Rehman**, Anand Paul, Seungmin Rho, Rabia Riaz, and Jeonghong Kim, "Blockchain Expansion to secure Assets with Fog Node on special Duty," Soft Computing, pp. 1-13, 2020. Impact Factor= (3.732)

19. Ateeq Ur Rehman, Aimin Jiang, **Abdul Rehman**, Anand Paul, Sadia Din, and Muhammad Tariq Sadiq, "Identification and role of opinion leaders in information diffusion for online discussion network," Journal of Ambient Intelligence and Humanized Computing, vol. 19, Issue 9, pp. 1-13, 2020. Impact Factor= (3.718)

20. Rizwan Ali Naqvi, Muhammad Arslan, **Abdul Rehman**, Ateeq Ur Rehman, Woong-Kee Loh, and Anand Paul, "Deep Learning-Based Drivers Emotion Classification System in Time Series Data for Remote Applications," Remote Sensing, vol. 12, Issue. 3, pp. 587, 2020. doi: 10.3390/rs12030587. Impact Factor= (5.349)

21. Farhan Amin, Rashid Ali Abbasi, **Abdul Rehman**, and Gyu Sang Choi "An Advanced Algorithm for Higher Network Navigation in Social Internet of Things Using Small-World Networks" Sensors. 2019, vol. 19, no. 9, pp. 2007. doi: 10.3390/s19092007. Impact Factor= (3.847)

22. Sadia Din, Anand Paul, and **Abdul Rehman**, "5G-enabled Hierarchical architecture for software-defined intelligent transportation system," Computer Networks, Volume 150, pp.81-89, 2019, doi: 10.1016/j.comnet.2018.11.035. Impact Factor= (5.493)

23. **Abdul Rehman**, Anand Paul, Malik Junaid Gul, Won-Hwa Hong, and Hyuncheol Seo, "Exploiting small world problems in a SIoT environment," Energies, vol. 11, no. 8, 2018. doi: 10.3390/en11082089. Impact Factor= (3.252)

24. **Abdul Rehman**, Muhammad Mazhar Rathore, Anand Paul, Faisal Saeed, and Raja Wasim Ahmad, "Vehicular traffic optimisation and even distribution using ant colony in smart city environment," IET Intelligent Transport System, vol. 12, no. 7, pp. 594-601, 2018. doi: 10.1049/iet-its.2017.0308. (Impact Factor= 2.568)

25. Faisal Saeed, Anand Paul, **Abdul Rehman**, Won Hwa Hong, and Hyuncheol Seo, "IoT-based intelligent modeling of smart home environment for fire prevention and safety" Journal of Sensor and Actuator Networks, vol. 7, no. 1, pp. 11, 2018. doi: 10.3390/jsan7010011. CiteScore= (4.2)

Proceedings and Conferences:

26. Rabia Khan, Ayesha Khan, Jehangir Arshad, Ateeq Ur Rehman, **Abdul Rehman**, and Anand Paul "Analysis on Optimal Location of Centralized Generation and Storage in DC Microgrids for Rural Electrification" The 17th International Conference on Multimedia Information Technology and Applications (MITA 2021), July 5-7, 2021, Jeju, South Korea.

27. Sanjar Karshiev, **Abdul Rehman**, Anand Paul, and Kim JeongHong "Weight Dropout for Preventing Neural Networks from Overfitting" 2020 8th International Conference on Orange Technology (ICOT), Dec. 18-21, 2020, Daegu, South Korea.

28. Ateeq Ur Rehman, Rizwan Tariq, **Abdul Rehman**, and Anand Paul, "Collapse of Online Social Networks: Structural Evaluation, Open Challenges, and Proposed Solutions" In 2020 IEEE Globecom Workshop, Dec. 07-11, 2020, Taipei, Taiwan.

29. Mohsin Raza, Ali Raza Barket, Ateeq Ur Rehman, **Abdul Rehman**, and Inam Ullah, "Mobile Crowdsensing based Architecture for Intelligent Traffic Prediction and Quickest Path Selection" In 2020 International Conference on UK-China Emerging Technologies (UCET), Aug. 20-21, 2020, Glasgow, UK.

30. **Abdul Rehman**, Anand Paul, Muhammad Azfar Yaqub, and Muhammad Mazhar Ullah Rathore, "Trustworthy intelligent industrial monitoring architecture for early event detection by exploiting social IoT," In Proceedings of the 35th Annual ACM Symposium on Applied Computing, March 30, 2020, Brno, Czech Republic.

31. **Abdul Rehman**, Anand Paul, Ateeq Ur Rehman, Farhan Amin, Rao Muhammad Asif, and Nematullo Rahmatov, "An Efficient Friendship Selection Mechanism for an Individual's Small World in Social Internet of Things" 2020 International Conference on Engineering and Emerging Technologies (ICEET), Feb.21-22, 2020, Lahore, Pakistan.

32. Ateeq Ur Rehman, Aimin Jiang, **Abdul Rehman**, and Anand Paul, "Weighted based trustworthiness ranking in social internet of things by using soft set theory" 2019 IEEE 5th International Conference on Computer and Communications (ICCC), Dec. 6, 2019, Chengdu, China.

33. Eungyeong Jang, Karshiev Sanjar, **Abdul Rehman**, and Jeonghong Kim "Quickest Path Selection Towards the Destination in Urban Environment" 2019 Eleventh International Conference on Ubiquitous and Future Networks (ICUFN), Aug. 22, 2019, Zagreb, Croatia.

34. Mustansar Fiaz, Kamran Ali, **Abdul Rehman**, Malik Junaid Gul, and Soon Ki Jung, "Brain MRI Segmentation using Rule-Based Hybrid Approach" International Workshop on Frontiers of Computer Vision (IWFCV), Gangneung,Gangwon-do, Republic of Korea, Feb. 20-22, 2019.

35. Alfred Daniel, Muhammad Mazhar Ullah Rathore, Faisal Saeed, **Abdul Rehman** and Anand Paul "Intrusion Detection using Decision Tree Model in High-Speed Environment" 2018 International Conference on Soft-computing and Network Security (ICSNS), Feb. 14-16, 2018, Tamil Nadu, India.

36. **Abdul Rehman**, Sadia Din, Anand Paul, and Waqar Ahmad, "An algorithm for alleviating the effect of hotspot on throughput in wireless sensor networks" 2017 IEEE 42nd Conference on Local Computer Networks Workshops (LCN Workshops), Oct. 9-12, 2017, Singapore.

Students Co-supervised

1. Mr. Ateeq Ur Rehman, **Ph.D. candidate**
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2. Ms. Farah Batool, **M.S candidate**
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3. Mr. Tahir Sher, **M.S candidate**
Institute: Department of Creative Technologies, Air University, Islamabad, Pakistan
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References

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