

DR. IRFAN AHMED

Associate Professor & Chairman
Department of Physics
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EDUCATION

- **PhD** (Electrical Engineering) **2011**
Michigan Technological University, Houghton MI, USA.
- **M. E.** (Electrical Engineering) **2005**
NED University of Engg. & Tech. Karachi Pakistan
- **B. E.** (Electrical Engineering) **1994**
NED University of Engg. & Tech. Karachi Pakistan

EXPERIENCE

Academic:

- NED University of Engg. & Tech. Karachi Pakistan
Associate Professor 2012 -to date
Develop Syllabus, Administer Labs, Supervise PhD /Master's Thesis
- NED University of Engg. & Tech. Karachi Pakistan
Assistant Professor 2005-2012
- NED University of Engg. & Tech. Karachi Pakistan
Lecturer 2001-2005

Industrial / Administrative:

- NED University of Engg. & Tech. Karachi Pakistan
Chairman Department of Physics 2020 to date
- NED University of Engg. & Tech. Karachi Pakistan
Controller of Examination 2015- 2017
- Black & Veatch International (US based), Karachi
Electrical Engineer 1996-2001
Startup & Commissioning of Power Plant E & I Equipment
- Zelin (Pvt) Ltd.
Electrical Engineer 1994-1996
Estimation, Costing, and Bidding of Turnkey Projects

PUBLICATIONS

- See attached List, or <https://orcid.org/0000-0003-3629-5034>

GRANTS

- SRSP 2023-24, Funded by Sindh HEC
 - Co-PI, “Mobile-air quality monitoring system for public health and safety”, PKR 3.4 Million, 2024
- MOST Endowment Fund
 - PI, “Routing Reliability Improvement in IoT-based-MANET”, PKR 3.0 Million, 2020
- Higher Education Commission-NRPU
 - CO-PI, “NB-IoT ProSe: Proximity Services enabled NB-IoT for Reliable and Critical Communication in Low-Powered Applications” PKR 6.9 Million, Project No.17060,2021
 - CO-PI, “Flexible Testbed for device-to-device (D2D) communication in 5G cellular Network” PKR 6.5 Million , Project Number: 6054, 2018-19
- Funded by National Technology Fund Program-IGNITE
 - Smart Metering Using Power Line Communication 2020
 - Automatic Controlling and Monitoring of Underwater Environment System **2019**
- Funded by National Grassroots ICT Research Initiative of National ICT R&D Fund
 - Design & Fabrication of Wireless System Based Smart Wheelchair **2016**
 - Design & Fabrication of Wearable Antenna for BAN **2015**
 - Design & Fabrication of a Patch Antenna on Non-Conventional substrate **2013**

POSTGRAD STUDENT SUPERVISION

Degree / Role	Successfully Supervised	Successfully Co-supervised	Currently Supervising	Currently Co-Supervising
PhD	03	01	2	0
Master's Thesis	08	02	02	0

AWARDS

- Dean's Award of Outstanding Scholarship, Michigan Tech USA **2011**
- Doctoral Finishing Fellowship, Michigan Tech USA **2011**
- Faculty Development Fellowship for PhD, NED University Karachi **2007**

COMMUNITY WORK

- Member “IGNITE Review Panel for Communication/Telecom Technologies” 2023
- Member “National Curriculum Review Committee” of Higher Education Commission Pakistan for the subject of Telecom Engineering, **2014-15**
- Member “National Curriculum Review Committee” of Higher Education Commission Pakistan for the subject of Telecom Systems, **2013-14**
- Member Technical Committee of Pakistan Standard Quality Control Authority for “Telecommunications and Information Exchange between Systems (I.C.T-TC-1)” **2013**
- Reviewer for research work in the following journals
 - IEEE (Antennas and Wireless Propagation Letters, Access)
 - Ad Hoc & Sensor Wireless Networks
 - Progress in Electromagnetic Research (PIER, PIER B,C,M, PIER Letters)

RESEARCH INTERESTS

- Antenna Design, Electromagnetic Compatibility, Wireless Channel Modeling, Wireless Local Positioning System, WSNs, Green Energy / Alternate Energy.

LANGUAGES

- Urdu, English, Sindhi, Punjabi, Arabic

MEMBERSHIPS

- Life Member, Pakistan Engineering Council
- Fellow Pakistan Academy of Engineering
- Member American Physical Society

LIST OF PUBLICATIONS BY DR. IRFAN AHMED

Journal Publications: HEC / ISI Master List/ JCR

S no.	Year	Description	Ranking			
			HJRS	JCR	ISI	SCO-PUS
1	2011	Irfan Ahmed , Warren F. Perger, and Seyed A. Zekavat, "Effects of Ground Constituent Parameters on Array Mutual Coupling for DOA Estimation," International Journal of Antennas and Propagation, vol. 2011, Article ID 425913, 5 pages, 2011. doi:10.1155/2011/425913	X	✓	✓	✓
2	2013	Irfan Ahmed and Warren F. Perger "Direction Finding in the Presence of Near Zone Resonant Size Scatterers", Progress in Electromagnetics Research (PIER B), Vol. 56, page 219-234, 2013	Y			✓
3	2014	Irfan Ahmed and Warren F. Perger "Effect of Ground on Antenna Mutual Impedance for DOA Estimation Using Dipole Arrays" Progress in Electromagnetics Research (PIER C), Vol. 46, page 179-185, 2014	Y			✓
4	2017	Muhammad Usman, Irfan Ahmed , Muhammad I. Aslam, Shujaat Khan, and S. M. Usman Ali, "SIT: A Lightweight Encryption Algorithm for Secure Internet of Things" International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 8, no. 1, pp-402-411, 2017.			✓	✓
5	2017	Muhammad Sohail Ibrahim, Irfan Ahmed , Muhammad I. Aslam, Muhammad Ghazaal, Muhammad Usman, Kamran Raza and Shujaat Khan, "A Low Cost FPGA based Cryptosystem Design for High Throughput Area Ratio" International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 8, no. 2, pp-385-393, 2017			✓	✓
6	2017	Tahniyat Aslam, Irfan Ahmed , Muhammad I. Aslam, Syed M. Usman Ali, Tahir Malik, "Direction of Arrival Estimation in the presence of Scatterer in noisy environment", Advanced Electromagnetics, Vol. 6, no. 3, pp.33-40, 2017.	Y		✓	✓
7	2019	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed , "Analysis of Downlink Uplink Decoupled Dense Heterogeneous Cellular Network based on User Association using Multi-Slope Path Loss Model," Advances in Electrical and Computer Engineering, vol.19, no.2, pp.45-52, 2019, doi:10.4316/AECE.2019.02006	X	✓	✓	✓
8	2019	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed , "Uplink coverage probability and spectral efficiency for downlink uplink decoupled dense heterogeneous cellular network using multi-slope path loss model". Telecommunication Systems, Springer, Issue 4/2019, Print ISSN: 1018-4864 ,Electronic ISSN: 1572-9451	W	✓	✓	✓

9	2020	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed et al., "Analysis of the decoupled uplink downlink technique for varying path loss exponent in multi-tier HetNet." Telecommunication Systems, Springer, Issue 4/2020 Print ISSN: 1018-4864, Electronic ISSN: 1572-9451 https://doi.org/10.1007/s11235-020-00661-1	W	✓	✓	✓
10	2021	Hira Mariam, Irfan Ahmed , Muhammad Imran Aslam, "Coverage probability of uplink millimeter wave cellular network with non-homogeneous interferers' point process" Physical Communication, Volume 45, 16 January 2021, 101274, ISSN 1874-4907, https://doi.org/10.1016/j.phycom.2021.101274	X	✓	✓	✓
11	2021	A K M Shafaat Ali and Irfan Ahmed , "Electrical characterization of glass fiber reinforced polymer (GFRP) composites for future metasurface antenna applications", Materials Research Express, ISSN 2053-1591 Volume 8, Number 6, 02 June 2021, https://doi.org/10.1088/2053-1591/ac02fe	X	✓	✓	✓
12	2022	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed , "Impact of fractional power control on downlink uplink decoupled-based HetNets" in varying path loss exponent environment. Trans Emerging Tel Tech. 2022; e4491. doi:10.1002/ett.4491	W	✓	✓	✓
13	2022	Jafri, Syed Talib Abbas, Irfan Ahmed , and Sundus Ali. 2022. "Queue-Buffer Optimization Based on Aggressive Random Early Detection in Massive NB-IoT MANET for 5G Applications" Electronics 11, no. 18: 2955. https://doi.org/10.3390/electronics11182955	W	✓	✓	✓
14	2022	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed and Attaullah Khawaja. "Uplink Performance of Narrowband Internet-of-Things Devices in Downlink-Uplink Decoupled-Based Heterogeneous Networks". Iran J Sci Technol Trans Electr Eng (2022). https://doi.org/10.1007/s40998-022-00570-w	X	✓	✓	✓
15	2022	Mariam, Hira, Irfan Ahmed , Sundus Ali, Muhammad Imran Aslam, and Ikram Ur Rehman. 2022. "Performance of Millimeter Wave Dense Cellular Network Using Stretched Exponential Path Loss Model" Electronics 11, no. 24: 4226. https://doi.org/10.3390/electronics11244226	W	✓	✓	✓
16	2023	Jafri, Syed Talib Abbas, Irfan Ahmed , Sundus Ali, Jamaiah Yahaya, Faizan Qamar, and Zuriani Hayati Abdullah. 2023. "Split Hop Penalty for Transmission Quality Metrics in a Better Approach to Mobile Ad Hoc Networking (BATMAN) for IoT-Based MANET" Symmetry 15, no. 5: 969. https://doi.org/10.3390/sym15050969	W	✓	✓	✓

Journal Publications: Peer Reviewed Journals

1	Akhter Saeed, Irfan Ahmed , "Wireless Sensor Networks – A Comprehensive Study ," <i>International Journal of Information and Communication Technology Trends</i> , Vol. 1, 2014.
2	Immad Girach, Muhammad I. Aslam, Irfan Ahmed , Syed M. Usman Ali and Muhammad Khalid, "Photonic Band Gap Materials- Theory, Techniques and Application," <i>Bahria University Journal of Information & Communication Technologies</i> , Vol. 8, No. 1, pp. 126-129, 2015.
3	Sana Aijaz, Irfan Ahmed , Muhammad I. Aslam, and Syed M. Usman Ali, "Spectrum Sensing in Cognitive Radios - Techniques, Issues and Challenges," <i>International Journal of Information and Communication Technology Trends</i> , Vol. 2, No. 1, pp. 1-4, 2015.
4	Akhter Saeed, Irfan Ahmed , Muhammad Imran Aslam, and Tahir Malik , " Improving Energy Efficiency of Wireless Sensor Network through Optimum Selection of Cluster Heads ", <i>BUJICT Journal</i> , Volume 10, Issue 1, June 2017, pp. 29-37.

5	Mumtaz, T., Muhammad, S., Aslam, M.I. and Irfan Ahmed , “Inter-slice resource management for 5G radio access network using markov decision process’. <i>Telecommunication Systems, Springer</i> (2022). https://doi.org/10.1007/s11235-021-00877-9
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Conference Publications:

1	Syed Asad Ali Shah, Muhammad I. Aslam, Irfan Ahmed , and Syed M. Usman Ali1, “Near-Perfect Metamaterial Absorber for the Visible Spectrum,” <i>International Conference on Advanced Materials and Process Engineering, Karachi</i> , 14-15 December, 2015.
2	Shafaq Mustafa, Muhammad I. Aslam, Irfan Ahmed , “Analysis of Electromagnetic Wave Propagation through Photonic Crystal Fibers,” <i>International Conference on Advanced Materials and Process Engineering, Karachi</i> , 14-15 December, 2015.
3	Radha Mohanlal, Muhammad I. Aslam, Irfan Ahmed , “Radio resource allocation techniques for downlink transmission in LTE-Advanced”, <i>4th International Conference on Electrical, Computer, Mechanical and Mechatronics Engineering (ICE2016)</i> , Dubai, Emirates, 4-5 February 2016,
4	Sundus Ali, Muhammed I. Aslam, Irfan Ahmed , “Analysis of Proportional Fairness Utility Function and Interference Mitigation in Heterogeneous Cellular Networks”, <i>31st IEEE Multi-topic International Symposium, Karachi</i> , 16th-17th March 2016.
5	Usama Fareed Ahmad, Muhammad ShahRukh Khan, Muneeb ur Rahman, S.M. Daniyal Hasan Shah, Irfan Ahmad , and Muhammad I. Aslam, “Wireless System Based Smart Wheelchair ”, <i>Proceedings of the 1st International Electrical Engineering Congress, Karachi</i> , 13-14 May, 2016.
6	Rana Khan, Tehzeb Jamal, Muhammad I. Aslam, Irfan Ahmed , “Comparative Analysis of Different Patch Antennas”, <i>Proceedings of the 1st International Electrical Engineering Congress, Karachi</i> , 13-14 May, 2016.
7	Sundus Ali, Muhammad I. Aslam, Irfan Ahmed , “MIMO channel modeling and capacity analysis using 3-D Spatial Statistical Channel Model for Millimeter Wave Outdoor Communication,” <i>14th International Bhurban Conf. on Applied Sciences and Technology, Islamabad, Pakistan, January 2017</i>
8	Zaheer Abbas Balouch, Muhammad I. Aslam, Irfan Ahmed , “Energy Efficient Image Encryption Algorithm” <i>International conference on Innovations in Electrical Engineering and Computational Technologies, Karachi, Pakistan, April 2017.</i>
9	Faizan Qamar, Talib Abbas, MHD Nour Hindia, Kaharudin Bin Dimiyati, Kamarul Ariffin Bin Noordin, Irfan Ahmed , “Characterization of MIMO Propagation Channel at 15 GHz for the 5G Spectrum,” <i>2017 IEEE 13th Malaysia International Conference on Communications (MICC)</i> , 28-30 Nov. 2017, The Puteri Pacific, Johor Bahru, Malaysia.
10	Talib Abbas, Faizan Qamar, Irfan Ahmed , Kaharudin Dimiyati, Mohammed B. Majed “Propagation Channel Characterization for 28 and 73GHz Millimeter-Wave 5G Frequency Band” <i>IEEE Scored Putrajaya, Malaysia December 2017</i>
11	Hira Mariam, Muhammad I. Aslam, Irfan Ahmed , “ <i>Device-to-Device Communication in Cellular Networks: A Survey,</i> ” <i>International Conference on Emerging Trends in Telecommunication and Electronic Engineering, 27 - 28 February 2018, Karachi.</i>
12	Tariq Mumtaz, Shahabuddin Muhammad, Nazeeruddin Mohammad, Muhammad Imran Aslam and Irfan Ahmed , “Modeling and Evaluation of Mobility Management in mmWave Cellular Networks”, <i>21st IEEE International Multi Topic Conference, Karachi, Pakistan, 1-2 November 2018. Karachi; Hamdard University.</i>
13	Hasan Rafee, Muhammad I. Aslam, Irfan Ahmed , “Green Computing: Techniques and Challenges,” <i>First International Conference on Carbon Neutral Built Environment (CNBT-I), Karachi, Pakistan, 20-21 December 2018.</i>

14	Hasan Rafae, Muhammad I. Aslam, Irfan Ahmed , Furqan Alam, Syed Waqar Jamil, "Awareness of Green Computing among Students of NED University of Engineering and Technology," First International Conference on Carbon Neutral Built Environment (CNBT-I), Karachi, Pakistan, 20-21 December 2018.; Karachi; NED University
15	Hasan Rafae, Syed Waqar Jamil, Muhammad I. Aslam and Irfan Ahmed , "Internet of Nano Things: Next Step for Future of Nanotechnology," Proceedings of the 4th International Electrical Engineering Conference, Karachi, 25-26 January, 2019.; Karachi; IEP
16	T. Abbas, F. Qamar, M. N. Hindia, R. Hassan, Irfan Ahmed and M. I. Aslam, "Performance Analysis of Ad Hoc on-Demand Distance Vector Routing Protocol for MANET," <i>2020 IEEE Student Conference on Research and Development (SCORED)</i> , Batu Pahat, Johor, Malaysia, 2020, pp. 194-199, doi: 10.1109/SCORED50371.2020.9250989.
17	Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed et al., "Performance Analysis of Single-Hop Device to Device Communication," 2021 International Bhurban Conference on Applied Sciences and Technologies (IBCAST), 2021, pp. 974-978, doi: 10.1109/IBCAST51254.2021.9393266.
18	A. Danish, S. Ali, M. I. Aslam and Irfan Ahmed , "Future prospects and challenges associated with intelligent reflecting surfaces enabled wireless communication," <i>2021 IEEE 18th International Conference on Smart Communities: Improving Quality of Life Using ICT, IoT and AI (HONET)</i> , 2021, pp. 121-125, doi: 10.1109/HONET53078.2021.9615389.
19	T. Aslam, Irfan Ahmed , S. Ali and M. I. Aslam, "TeraHertz Communication and Associated Challenges in 6G Cellular Networks," <i>2021 4th International Conference on Computing & Information Sciences (ICCIS)</i> , 2021, pp. 1-6, doi: 10.1109/ICCIS54243.2021.9676382.
20	Mariam, Hira, Irfan Ahmed , and Muhammad Imran Aslam. 2022. "Impact of Multiple Beams and Mobility-Based Beam Alignment Error on Millimeter Wave Communication" <i>Engineering Proceedings</i> 20, no. 1: 42. https://doi.org/10.3390/engproc2022020042
21	Mariam, Hira, and Irfan Ahmed . 2023. "Performance of Dense Millimeter Wave Network with Uniform Cylindrical Array" <i>Engineering Proceedings</i> 32, no. 1: 8. https://doi.org/10.3390/engproc2023032008
22	Jafri, Syed Talib Abbas, Irfan Ahmed , Sundus Ali, and Faizan Qamar. 2023. "Analysis of AgRED Performance in LR-WPAN Dense Ad-Hoc Networks" <i>Engineering Proceedings</i> 32, no. 1: 5. https://doi.org/10.3390/engproc2023032005

Book Chapters:

1	Seema Ansari, Tahniyat Aslam, Adeel Ansari, Pablo Otero, Irfan Ahmed , and Fatima Maqbool, "Internet of Things: Technologies and Applications," in Introduction to Internet of Things in Management Science and Operations Research: Implemented Studies, A. Editor, Fausto Pedro García Márquez, Benjamin Lev. Springer Nature, 2021 pp. 1-30.
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