

DR. IRFAN AHMED

Associate Professor & Chairman
Department of Physics
NED University of Engineering & Technology,
University Road Karachi, 75270, Pakistan
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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

- Sindh Higher Education Commission-SRSP 2023-24
 - CO-PI, “Mob-Air: Indigenously developed mobile air quality monitoring system for public health and safety” Amount: 3.4M ,Proposal No.24/18
- Higher Education Commission-NRPU
 - CO-PI, “NB-IoT ProSe: Proximity Services enabled NB-IoT for Reliable and Critical Communication in Low-Powered Applications” Amount: 6.9M, Project No.17060,2021
 - CO-PI, “Flexible Testbed for device-to-device (D2D) communication in 5G cellular Network” Amount: 6.5M Project Number: 6054, 2018-19
- MOST Endowment Fund
 - PI, Routing Reliability Improvement in IoT-based-MANET, 3.0 Million, 2020
- Funded by National Technology Fund Program-IGNITE
 - 'Development of IoT Weather Station with NED Local MQTT broker and Dashboard'- 2024
 - 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 | 04 | 01 | 2 | - |
| Master's Thesis | 10 | 02 | 04 | - |

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 /JCR / SCIE /ESCI /Scopus

| S no. | Year | Description | Ranking | | | | |
|-------|------|---|---------|-----|------|------|---------|
| | | | HEC | JCR | SCIE | ESCI | 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," <i>International Journal of Antennas and Propagation</i> , vol. 2011, Article ID 425913, 5 pages, 2011. doi:10.1155/2011/425913 | W | ✓ | ✓ | | ✓ |
| 2 | 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," <i>Advances in Electrical and Computer Engineering</i> , vol.19, no.2, pp.45-52, 2019, doi:10.4316/AECE.2019.02006 | W | ✓ | ✓ | | ✓ |
| 3 | 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". <i>Telecommunication Systems</i> , Springer, Issue 4/2019, Print ISSN: 1018-4864 ,Electronic ISSN: 1572-9451 | W | ✓ | ✓ | | ✓ |
| 4 | 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." <i>Telecommunication Systems</i> , Springer, Issue 4/2020 Print ISSN: 1018-4864, Electronic ISSN: 1572-9451 https://doi.org/10.1007/s11235-020-00661-1 | W | ✓ | ✓ | | ✓ |
| 5 | 2021 | Hira Mariam, Irfan Ahmed , Muhammad Imran Aslam, "Coverage probability of uplink millimeter wave cellular network with non-homogeneous interferers' point process" <i>Physical Communication</i> , Volume 45, 16 January 2021, 101274, ISSN 1874-4907, https://doi.org/10.1016/j.phycom.2021.101274 | W | ✓ | ✓ | | ✓ |

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|----|------|--|---|---|---|---|
| 6 | 2021 | A. K. M. Shafaat Ali and Irfan Ahmed , "Electrical characterization of glass fiber reinforced polymer (GFRP) composites for future metasurface antenna applications", <i>Materials Research Express</i> , ISSN 2053-1591 Volume 8, Number 6, 02 June 2021, https://doi.org/10.1088/2053-1591/ac02fe | W | ✓ | ✓ | ✓ |
| 7 | 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" <i>Transactions on Emerging Telecommunications Technologies</i> 2022; e4491. doi:10.1002/ett.4491 | W | ✓ | ✓ | ✓ |
| 8 | 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" <i>Electronics</i> 11, no. 18: 2955. https://doi.org/10.3390/electronics11182955 | W | ✓ | ✓ | ✓ |
| 9 | 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". <i>Iranian journal of science and technology-transactions of electrical engineering</i> (2022). https://doi.org/10.1007/s40998-022-00570-w | W | ✓ | ✓ | ✓ |
| 10 | 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" <i>Electronics</i> 11, no. 24: 4226. https://doi.org/10.3390/electronics11244226 | W | ✓ | ✓ | ✓ |
| 11 | 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" <i>Symmetry</i> 15, no. 5: 969. https://doi.org/10.3390/sym15050969 | W | ✓ | ✓ | ✓ |
| 12 | 2024 | Tahnayat Aslam, Irfan Ahmed , Sundus Ali, "Analysis of User Association in Multi-Tier, Multi-Band Heterogeneous Cellular Networks". <i>Telecommunication Systems</i> , Springer, Issue 88, 8 (2025), Print ISSN: 1018-4864 ,Electronic ISSN: 1572-9451 https://doi.org/10.1007/s11235-024-01248-w | W | ✓ | ✓ | ✓ |
| 13 | 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" <i>International Journal of Advanced Computer Science and Applications (IJACSA)</i> , Vol. 8, no. 1, pp-402-411, 2017. | X | ✓ | ✓ | ✓ |
| 14 | 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" <i>International Journal of Advanced Computer Science and Applications (IJACSA)</i> , Vol. 8, no. 2, pp-385-393, 2017 | X | ✓ | ✓ | ✓ |
| 15 | 2017 | Tahnayat Aslam, Irfan Ahmed , Muhammad I. Aslam, Syed M. Usman Ali, Tahir Malik, "Direction of Arrival Estimation in the presence of Scatterer in noisy environment", <i>Advanced Electromagnetics</i> , Vol. 6, no. 3, pp.33-40, 2017. | X | ✓ | ✓ | ✓ |

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| 16 | 2024 | Ali, A. K. M. S., Ahmed, I., Ali, S., & Khalid, M. (2024), "Gain Enhancement of Patch Antenna using Novel Glass Fiber Reinforced Polymer (GFRP) based Metasurface", <i>Advanced Electromagnetics</i> , 13(3), 10–18. https://doi.org/10.7716/aem.v13i3.2273 | X | ✓ | | ✓ | ✓ |
| 17 | 2013 | Irfan Ahmed and Warren F. Perger "Direction Finding in the Presence of Near Zone Resonant Size Scatterers", <i>Progress in Electromagnetics Research (PIER B)</i> , Vol. 56, page 219-234, 2013 | Y | | | | ✓ |
| 18 | 2014 | Irfan Ahmed and Warren F. Perger "Effect of Ground on Antenna Mutual Impedance for DOA Estimation Using Dipole Arrays" <i>Progress in Electromagnetics Research (PIER C)</i> , Vol. 46, page 179-185, 2014 | Y | | | | ✓ |
| 19 | 2022 | 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 | Y | | | | ✓ |
| 20 | 2023 | 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 | Y | | | | ✓ |
| 21 | 2023 | 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 | Y | | | | ✓ |

Journal Publications: Peer Reviewed Journals

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| 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 | Akhtar 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 |

Conference Publications:

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| 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</i> , Karachi, 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</i> , Karachi, 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</i> , Karachi, 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</i> , Karachi, 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</i> , Karachi, 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</i> , Islamabad, Pakistan, January 2017 |
| 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</i> , Karachi, Pakistan, April 2017. |
| 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," 2017 IEEE 13th Malaysia International Conference on Communications (MICC), 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" IEEE Scored Putrajaya, Malaysia December 2017 |
| 11 | Hira Mariam, Muhammad I. Aslam, Irfan Ahmed , " <i>Device-to-Device Communication in Cellular Networks: A Survey</i> ," International Conference on Emerging Trends in Telecommunication and Electronic Engineering, 27 - 28 February 2018, Karachi. |
| 12 | Tariq Mumtaz, Shahabuddin Muhammad, Nazeeruddin Mohammad, Muhammad Imran Aslam and Irfan Ahmed , "Modeling and Evaluation of Mobility Management in mmWave Cellular Networks", 21st IEEE International Multi Topic Conference, Karachi, Pakistan, 1-2 November 2018. Karachi; Hamdard University. |
| 13 | Hasan Rafea, Muhammad I. Aslam, Irfan Ahmed , "Green Computing: Techniques and Challenges," First International Conference on Carbon Neutral Built Environment (CNBT-I), Karachi, Pakistan, 20-21 December 2018. |
| 14 | Hasan Rafea, 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 Rafea, 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. |

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| 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," 2021 IEEE 18th International Conference on Smart Communities: Improving Quality of Life Using ICT, IoT and AI (HONET), 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," 2021 4th International Conference on Computing & Information Sciences (ICCIS), 2021, pp. 1-6, doi: 10.1109/ICCIS54243.2021.9676382. |
| 20 | Sundus Ali, Muhammad Imran Aslam, Irfan Ahmed , Syed Talib Abbas Jafri, Tahniyat Aslam, "Development of a novel OMNET++ framework for analysis of an NB-IoT uplink network" 3rd International Conference on Emerging Trends in Smart Technologies (ICETST), 2024 |
| 21 | Syed Talib Abbas Jafri, Irfan Ahmed et. al. "Development of narrow band internet of things testbed for proximity services" International Conference on Computing Research (ICCoR 2024) |

Book Chapters:

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|---|--|
| 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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