Personal information

Surname / First name	Umrani, Abdul Waheed
Address	Department of Telecommunication, Mehran University of Engineering and Technology, Jamshoro - 76062 (Pakistan)
Telephone	+92-22-2772277 Mobile: +92-301-3562411
Personal Email	waheed.umrani@faculty.muet.edu.pk
Nationality	Pakistani
Date of birth	March 17, 1971
Gender	Male
Research Interest	My research interests focus in the areas of Digital Communications (including optical) over Propa- gation Channels, Multiple Antenna Systems (MIMO) and their Channel Modeling, Cognitive Radios (Spectrum Sharing and Co-operative Diversity Systems), Social aspects of ICTs related to health and education.
Education	
2008 2002 1995	Ph.D. in Communication Engineering - Nanyang Technological University, Singapore M.E. in Communication Engineering - Nanyang Technological University, Singapore B.E. in Electronics - MUET, Jamshoro, PK
Honors and Awards	
1990 - 1994	First Position Holder (4 years) in BE (Electronics) from Mehran University, Jamshoro (University Top) Help developed Department of Telecommunication engineering, Mehran UET, Jamshoro which has remained a Centre of Excellence in Telecommunications/IT areas.
2012	Erasmus-Mundus Post-doc Fellowship - Politecnico di Milano, IT
2002 - 2006	PhD Research Scholarship - Nanyang Technological University, SG
1999 - 2001	Master of Engineering Research Scholarship - Nanyang Technological University, SG
1995	Gold Medalist and Best Graduate Award - MUET, Jamshoro, PK
1995	Organized and participated various International/National conferences as a Steering/Organizing/TPC member (ICCSS'12, GlobeCom'00, VTC'00, VTC'03, ICICSPCM'03, IMTIC'08, IMTIC'13, ICCSS'14, IMTIC'17 etc.)
Employment History	
Academia	
2012 – present	Professor at Department of Telecommunication, MUET, Jamshoro, PK
2013 – 2015	Professor at Communications Engineering, Dawood UET, Karachi, PK
Oct 2012 - Dec 2012	Visiting Professor at Department of Electronic and Information Nov, Politecnico di Milano, Italy
2012 – 2013	Professor at Department of Telecommunication, MUET, Jamshoro, PK

Associate Professor at Department of Telecommunication, MUET, Jamshoro, PK

Lecturer at Department of Electronic and Telecommunication Engineering, MUET, Jamshoro, PK Teaching and Research Assistant at Nanyang Technological University, Singapore

Administrative

2010 - 2012

1996 - 2009

1999 - 2006

Aug 2016 – Oct 2021 May 2015 – July 2015 Aug 2013 – Aug 2015 May 2014 – July 2014 Registrar at MUET, Jamshoro, PK Acting Vice Chancellor at DUET, Karachi, PK Deon Faculty of Engineering at DUET, Karachi, PK Acting Vice Chancellor at DUET, Karachi, PK

Professional Experience

Major Responsibilities

Registrar, MUET

2016-2021

- To be the custodian of the Common Seal and the Academic Records of the University.
- To maintain register of the registered graduates in the prescribed manner.

Director at CIRCLE DUET, Karachi, PK

- To conduct elections of the member of the Authorities in the prescribed manner.
- To work under the control of Vice Chancellor and deal with and carry out official correspondence of the University on all academic and other matters, as may be directed.
- To arrange for publication of the Prospectus, Syllabi of the courses of studies, and the Calendar of the University in prescribed manner.
- To be responsible for getting the Statutes, the Regulations and Rules on all academic matter framed, reviewed and amended subject to the control of the Vice Chancellor.
- To arrange to prepare the Annual Report for submission to the Senate
- To deal with the cases, regarding (a) affiliation and disaffiliation of education institutions and related matters and (b) admission of educational institutions to the privileges.
- To act as University Resident Officer and in this capacity to be responsible in exercising over all vigilance and provide regularly adequate information to the Vice Chancellor on matters likely to disturb general atmosphere of the University
- To grant all kinds of leaves except Ex-Pakistan to the employees of BPS-01 to BPS-15.
- To recommend to the Authority all necessary funds of the employees of the University in prescribed manner.
- To sign Agreements, Bonds and Contracts made on behalf of the University regarding establishment/service matters and to perform other duties as may be assigned/prescribed from time to time by the Competent Authority.
- Secretary of Syndicate, Senate and Academic Council and Selection Board.
- Member Finance and Planning Committee of the University.
- Member Departmental Working Development Party.
- Convener School Management Committee.
- Chairman Executive Committee of Sports.
- Board of Governors USPCAS-W, MUET Jamshoro
- Board of Governors CEAD, MUET Jamshoro
- Member Board of Trusts of MUPHS.
 - Member Sports Board.

Professor, MUET

2012-Todate

- Teaching student of B.E, M.E. and Ph.D. programs of the University.
- Supervising undergraduate and postgraduate research.
- In-charge Digital Signal Processing Laboratory.
- Chairman Thesis/FYP committee of the Department.
- Acting Chairman of Department of Telecommunication Engineering at various instances since 2008.
- Member Disciplinary Committee Department of Telecommunication Engineering.

Acting Vice Chancellor, DUET

May 27 to July 5, 2014 May 29 to July 23, 2015

Responsible for the management of all affairs of University that include administrative, academic and financial matters

Dean Faculty of Engineering, DUET	
2013-2015	
	Overseeing the academic affairs of all engineering departments of the university pertaining to under-
	graduate and graduate programs.
-	PEC Accreditation of 08 engineering programs
-	Supervision of Curriculum of all engineering programs in line with HEC as a Convener Curriculum
_	Member Syndicate, Senate and Academic Council
_	Member Finance and Planning Committee.
Director CIRCLE, DUET	
2012 2015	CIPCIE (Contro for Innovation Research Commercialization Learning & Entropronourship)
2013-2015	Convener Procurement Committee: Procurement of IT equipment (PCs, multimedia etc.) for the
_	center and the University
-	Convener External Scholarship Committee: E3 Scholarships, PEF Scholarships
-	Member Steering Committee for Conference on "OPERATIONILISING THE JOINT AND EQUAL OWNERSHIP OF OIL AND GAS RESOURCES – ISSUES AND OPTIONS" December 21-22, 2013 @ Hotel Pearl Continental, Karachi, Pakistan
-	Member Steering Committee for Conference on "Self Sufficiency in Energy – Expediting the Devel-
	opment of Thar Coal and Power Projects" January 25-26, 2014 @ Hotel Pearl Continental, Karachi
Professor, DUET	
2016-2021	
-	Teaching student of B.E. programs of Telecommunication Engineering of the University.
-	Supervising undergraduate and postgraduate research.
Professional Training	
April 11-15,2017	Finance for Non-Financial Managers a 5-day hands-on training by LUMS, Held at Movenpick Hotel Karachi
April 21-23,2017	Quality Assurance and Governance 3-day hands-on training by HEC Islamabad, held at Mehran Hotel Karachi
2016	Hands on Training on Time Management (3-days) organized by PPMI, Ministry of Planning, Develop- ment and Reforms, Islamabad
2015	Training of Public Procurement Rules at PC Hotel (5 Days), Karachi by Institute of Tender Manage- ment, Lahore
2015	HEC-BC Leadership Training for Senior Administrators at Glasgow, UK - HEC-British Council
2015	HEC sponsored Outcome Based Education (OBE) Trainings attended at various places from 2012 to 2017 @ Islamabad, Lahore and Jamshoro
2010	Academic Training to enhance professional competency - Higher Education Commission, Pakistan
2007	Hannover Messe, Hannover, Germany - Participated as an official delegate from Academia in this mammoth fair sponsored by Engineering Development Board Pakistan
2004	FPGA for Wireless Communications - Xilinx, Singapore
2004 2004	Specialized Software: Advanced Design System (ADS) - Agilent 1F3D an Electromagnetic Simulator
2004	by ZELAND
2000	Hands on Training - Earth Station Installation of LEO Equatorial Satellite launched by Singapore
Professional Memberships	
1996 - Todate	Life Member - Pakistan Engineering Council (Electro-4171)
2000 - present	Member IEEE Communication Society, USA

2015 - Todate	Fellow IACSIT, Singapore (Member No. 8033389)
2012	cation Navigation and Earth Observation systems) - DLR Germany
2007 - 2014	Member National Curriculum Revision Committee, Higher Education Commission Pakistan - in the
	subjects of Electronic Engineering, Telecommunication Engineering and Computer System Engineer-
	ing
2010	Vice President, IEEE Communication Society (Karachi Chapter)
2003	Member Organizing Committee IEEE ICICS-PCM 2003, Singapore
2008 - 2013	Member Technical Program Committee for IMTIC 2008, IMTIC 2012, and IMTIC 2013, MUET, Pak-
2012	ISIAN
2012 2010 - Todato	Session Chair in ICCSS 12, INTIC 2000, INTIC 2012 Reviewer of the following journals: IEEE Communication Letters, Progress in Electromagnetic Re-
2010 - Iouale	search and IEEE Antennas and Wireless Propagation Letters
TEACHING	
	Courses Taught- Postgraduate level
-	Information Theory and Coding Techniques (M.E./PhD)
-	Telecom Management Networks
-	Mobile and Wireless Communications
-	Advanced Data Communications
-	Spread Spectrum Communications (PhD)
-	
_	Communication Systems
_	Wireless Communications
_	Mobile Network Planning
-	Probability and Stochastic Processes
	Please visit the following webpage for further details. Teaching, lesson plans and assessment
RESEARCH	
	I have a very diversified research portfolio and my research interests include but not limited to:
_	Modulation and Coding Techniques in Digital Communications
-	Smart Antennas and of Multiple Antenna Systems (MIMO)
-	Optical/Wireless Communication Systems
-	Cognitive Radios (Spectrum Sharing and Co-operative Diversity Systems)
-	Applications of ICT in Health/Education (Social Sciences)
GRANTS/PROJECTS (Fellowships)	
2012	Secured an Erasmus-Mundus fellowship of Euro 2500/- per month to attend Staff-mobility at Politec-
	nico di Milano, Milan Italy. This project involves an experimental study/work on a very large earth
2002 2006	station of GEO Satellite for weather and remote sensing. Advisor: Carlo Riva.
2002 – 2006	- Funded by Ministry of Education, Singapore, it includes Tuition Fee waiver and a stipend of USD
	1500/- per month for 4 years. This Ph.D. project (dissertation) involves an in depth study, analyses,
	simulations and experimental work on smart antenna techniques and develop new channel models
	and algorithms for wireless communication system such as CDMA 2000 and OFDM based WLAN (cellular vehicular and indeer environments) - Advisors: V K. Dubou and Guan V L
1999 - 2001	Downlink Performance of DS CDMA for LEO Satellite Communication Links - Funded by Ministry of
1999 – 2001	Education, Singapore, it includes Tuition Fee waiver and a stipend of USD 1400/- per month for two
	years. This M. Eng. project (dissertation) involves an in depth analyses, prototype development,
	simulations and experimental work on Low Earth Orbit Satellite MERLION 12 which was launched by
	Singapore in 1999-2000. The project had several teams to develop an indigenous LEO Satellite. I

have developed a Land Mobile Satellite Channel Simulator and used it to compute the performance

under practical LEO Satellite environments - Advisor: V. K. Dubey

2014	Secured funding of 69,000 PKR in National ICT Grassroots Initiative Research Program for the project in Spectrum Sensing Project
Travel Grants	
2017	Secured Travel Grant of 263,800 PKR from HEC Islamabad to attend PIERS'17 in St. Petersburg, Russia.
2014	Secured Travel Grant of 250,000 PKR from Dawood University to attend ICCSS'14 in RIZE Turkey.
2011	Secured Travel Grant of 217,000 PKR from HEC Islamabad to attend PIERS'11 in Marrakesh, Morocco.
2005	Secured Travel Grant of USD 3100/- from NTU-Singapore to attend IEEE Sarnoff Symposium, NJ, USA
2000	Secured Travel Grant of USD 2600/- from LEE FOUNDATION Singapore to attend VTC'00 in Boston, USA
2000	Secured Travel Grant of USD 800/- from IEEE Communication Society USA and maintenance al-
_	Modulation and Coding Techniques in Digital Communications
PROJECT/THESIS SUPERVISION:	
Ph.D. Supervision	
2021	Performance Analysis of CDM/A Techniques for Next Generation Optical Networks (2021) – Ms. Kehkashan Asma
M. Eng./MPhil Theses Supervision	
2017	Performance Analysis with Coordination among base station for NGN Systems – Mr. Abdul Ali Khan
2016	Evaluation and Optimization of Low Complexity LDPC Iterative Decoding Algorithm – Mr.Mir Moham- mad.
2013	Performance Analysis and Latency Calculation of Cooperative Communication Protocols
2012	Solving gateway discover and handover problems using NS-2 in Wireless AD-HOC Networks Mr. Muhammad Hasan Nasir.
2011	Pico-Blaze Soft Core Microcontroller using Verilog/VHDL – Mr. M. Rizwan Anjum.
2012	PAPR Reduction Technique in MC CDMA Systems – Mr. Sajjad Memon
2011	Spallal Correlation based co-operative diversity in Wireless Sensor Networks – Mr. Monammad All.
2009	Approach for Pate Selection in MIMO OEDM Systems – Ms. Mussarat Refigue
2008	Performance Analysis with simulation of UMTS/WCDMA based MIMO Networks - Mr.Kamran Asghar.
2008	Performance Analysis of Routing protocols for Wireless Sensor Networks in relation to MANETS – Touqeer Noor.
2007	Performance Analysis of Interleave Division Multiple Access (IDMA) in Future Wireless Communica- tions – Mr. Din Muhammad Sangrasi.
2007	Localization tracking of Mobile Stations in GSM/ESGE Networks: A study – Mr. Mujeeb-urRehman. In addition to above, I have supervised more than 40 undergraduate FYPs.
LECTURES/ TALKS	
2014	Addressing Rural Poverty in Pakistan: Perspective of Community Engagement 2nd International Con- ference on Computing and Social Sciences, Bize, Turkey 2014
2012	OFCDM a promising broadband technique for Broadband Wireless Access Wireless and Propaga- tion Research Group, Department of Electronics and Information, Politecnico di Milano- ITALY 22nd Dec.2012
2012	Research Activities of CRG at Mehran UET Jamshoro Wireless and Propagation Research Group, Department of Electronics and Information, Politecnico di Milano- ITALY 22nd Dec. 2012.

2011	Performance Comparison of OFDM, MC-CDMA and OFCDM for 4G Wireless Broadband Access and Beyond Progress in Electromagnetic in Research Symposium, Marrakesh, Morocco, March 22, 2011.
2011	A Peak to Average Power Ratio Reduction of Multicarrier CDMA System Using Error Control Selective Mapping Progress in Electromagnetic in Research Symposium, Marrakesh, Morocco, March 22, 2011
2005	DS CDMA System Performance for Linear and Circular Antenna Arrays in Cellular Environment IEEE International Multi-Topic Conference on Information and Communications, INMIC 2005, Karachi, Pak- istan. 23-25 Dec. 2005.
2003	Performance of a 2D-RAKE receiver over spatially correlated Rayleigh fading channel IEEE Informa- tion, communications and signal processing and 4th Pacific Rim Conference on Multimedia, Singa- pore, 15-18 Dec.2003.
2000	Downlink performance of multi-beam multi-satellite CDMA-based LEO Satellite system with Power Control IEEE Global Conference on Communications, San Francisco, Ca, USA. 27-1st Dec. 2000.
2000	Role of PAF in a multi-satellite CDMA-based LEO Satellite System IEEE Vehicular Technology Con- ference Fall, Boston, Ma, USA, 24-28 Sept. 2000.
CONTINUOUS PROFESSIONAL DEVELOPMENT	
HEC (LID) RESOURCE PERSON	
2014	Five Days Workshop under Modern University Governance Program (IOT) on ADMINISTRATIVE SKILLS at Dawood UET Karachi. September 29 – October 3, 2014
2014	Five Days Workshop under Modern University Governance Program (IOT) on COMMUNICATION INTRA-DEPARTMENTAL at Dawood UET Karachi, September 29 – October 3, 2014
2014	2nd Workshop under Modern University Governance Program (IOT) on STRESS MANAGEMENT at Dawood UET Karachi, 8 – 12 December 2014
2014	2nd Workshop under Modern University Governance Program (IOT) on GOOD GOVERNANCE MODELS, TOOLS & TECHNIQUES at Dawood UET Karachi, 8 – 12 December 2014
2014	3rd Workshop under Modern University Governance Program (IOT) on FINANCIAL MANAGEMENT at Dawood UET Karachi, December 15 – 19, 2014
2014	4TH Workshop under Modern University Governance Program (IOT) on PROJECT MANAGEMENT at Dawood UET Karachi, December 22 – 26, 2014
PAKISTAN ENGINEERING COUNCIL RESOURCE PERSON	
2015	One-day Short Course Series on "Procurement Cycle & Contract Management" at Quaid-e-Awam
2015	One-day Short Course Series on "Mobile Communication & Emerging Techniques" at NED University of Engineering & Technology, Karachi held on November 30, 2015
LIST OF PUBLICATIONS	
_	BOOKS authored F. A. Umrani, Saima Mehar, A. W. Umrani, "Rudiments of Electronic Communication Systems: A Textbook", Higher Education Commission, Islamabad. BOOKS edited
-	Lab-book on Fiber Optics communication system, Co-edited with Mr. Hyder Bux, Dr. Aftab Memon & Dr. A.W. Umrani.
_	Lab-book on Learning communication system using MATLAB, Co-edited with Dr. M. A. Unar, Dr. A.W. Umrani and Dr. S. Memon BOOKS chapter

 F. A. Umrani, T. O'Farrell, and Umrani A. W., "Performance Analysis of PDC-OCDMA System with APD Mismatch" Wireless Networks, Information Processing and Systems CCIS-20, Springer-Verlag, Vol. 20, pp. 306-313, 2008. ISBN: 978-3-540-898528-8, Library of Congress: 2008940286. (Indexed in ISI proceedings, Springer Verlag and Scopus)

References

Will be furnished on request.

Annexes

1 List of publications

Publications

- [1] K. A. Memon, A. W. Umrani, M. A. Unar, W. Shah, and F. A. Umrani, "Design and analysis of high-speed bottleneck-free one-dimensional ocdma based gigabit symmetric pon," *Wireless Personal Communications*, vol. 126, no. 4, pp. 3147–3165, 2022.
- [2] K. A. Memon, A. Atieh, A. W. Umrani, M. A. Unar, and W. Shah, "Design and performance analysis of gpon-employed two-dimensional multidiagonal ocdma code," *Optical Engineering*, vol. 59, no. 7, p. 076105, 2020.
- [3] G. F. Mirza, A. W. Umrani, A. R. Jawad, N. Bohra, B. Chowdhry, and F. A. Umrani, "Anti-fog system for high speed vehicles using wi-fi," *Wireless Personal Communications*, vol. 106, no. 1, pp. 71–83, 2019.
- [4] K. A. Memon, A. Umrani, M. A. Unar, and W. Shah, "Implementation & performance analysis of bidirectional fso channel in hybrid tdm/wdm gigabit passive optical network," *3c Tecnología: glosas de innovación aplicadas a la pyme*, vol. 8, no. 1, pp. 166–181, 2019.
- [5] K. A. Memon, A. Umrani, M. Unar, W. Shah, and B. Chowdhry, "Spectral amplitude coding optical cdma: Performance analysis on free space optical channel," *International Journal of Engineering & Technology*, vol. 7, no. 4.38, pp. 31–33, 2018.
- [6] M. Saeed, A. Umrani, F. Umrani, Z. Shah, S. Kalwar, N. Ahmed, and F. Ahmed, "Interference cancellation and papr reduction using carrier interferometry codes for adaptive ncsofdm system used with dynamic spectrum access," in 2017 Progress In Electromagnetics Research Symposium-Spring (PIERS), pp. 3473–3477, IEEE, 2017.
- [7] S. Ahmed, M. Zhang, A. W. Umrani, and S. Kim, "Complexity reduced sbi estimation in iterative mimo systems," in 2016 International Conference on Advances in Electrical, Electronic and Systems Engineering (ICAEES), pp. 597–600, IEEE, 2016.
- [8] F. A. Umrani, A. W. Umrani, N. A. Umrani, K. A. Memon, and I. H. Kalwar, "Performance analysis of spectral amplitude coding based ocdma system with gain and splitter mismatch," J. Opt. Commun., vol. 34, no. 3, pp. 247–253, 2013.
- [9] S. M. Z. S. Shah, A. W. Umrani, and A. A. Memon, "Pmepr reduction for ofcdm using slm and pts," in 19th IEEE International Conference on Electronics, Circuits and Systems (ICECS), pp. 308–311, December 2012.
- [10] K. A. Memon, F. A. Umrani, A. W. Umrani, and N. A. Umrani, "Throughput of coded optical cdma systems with and detectors," *Journal of Optical Communications*, vol. 33, pp. 143–145, September 2012.
- [11] K. A. Memon, F. A. Umrani, A. Umrani, and N. A. Umrani, "Throughput of coded optical cdma systems with and detectors," *J. Opt. Commun.*, vol. 33, no. 3, pp. 143–145, 2012.
- [12] A. W. Umrani, F. A. Umrani, and A. A. Ursani, "A novel beamforming technique for cdma 2000 wireless communications: Performance analysis," Mehran University Research Journal of Engineering and Technology (MURJ), vol. 30, no. 1, pp. 65–74, 2011.
- [13] A. W. Umrani, F. A. Umrani, and A. A. Ursani, "A novel beam forming technique for cdma 2000 wireless communication: Performance analysis," MEHRAN UNIVERSITY RESEARCH JOURNAL OF ENGINEERING & TECHNOLOGY, vol. 30, no. 1, 2011.
- [14] S. M. Z. S. Shah, A. W. Umrani, and A. A. Memon, "Performance comparison of ofdm, mc-cdma and ofcdm for 4g wireless broadband access and beyond," in *Progress in Electromagnetic Research (PIER) Symposium Proceedings*, pp. 1396–1399, 2011. http://piers.org/piers/.
- [15] S. A. Memon, A. W. Umrani, F. A. Umrani, and A. K. Baloch, "A peak to average power ratio reduction of multicarrier cdma system using error control selective mapping," in *Progress in Electromagnetic Research (PIER) Symposium Proceedings*, pp. 1193–1196, 2011. http://piers.org/piers/.
- [16] A. A. Ursani, A. W. Umrani, and F. A. Umrani, "Unsupervised texture segmentation: Comparison of texture features," *Mehran University Research Journal of Engineering and Technology (MURJ)*, vol. 29, no. 4, pp. 653–660, 2010.
- [17] F. Umrani, B. Chowdhry, and A. Umrani, "Simulation design of dfb for pulsed doppler radar to measure wind velocities," *Mehran University Research Journal of Engineering and Technology*, vol. 29, no. 1, pp. 187–188, 2010.
- [18] F. A. Umrani, A. A. Ursani, and A. W. Umrani, "Monte-carlo simulation for pdc-based optical cdma system," *Mehran University Research Journal of Engineering and Technology (MURJ)*, vol. 29, no. 4, pp. 673–680, 2010.
- [19] F. A. UMRANI, A. A. URSANI, and A. W. UMRANI, "Monte-carlo simulation for pdc-based optical cdma system," MEHRAN UNIVERSITY RESEARCH JOURNAL OF ENGINEERING & TECHNOLOGY, vol. 29, no. 4, 2010.
- [20] F. A. Umrani, B. S. Chowdhry, and A. W. Umrani, "Simulation design of doppler filter bank (dfb) for pulsed doppler radar to measure wind velocities," *Mehran University Research Journal of Engineering and Technology (MURJ)*, vol. 29, no. 1, pp. 91–98, 2010.

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- [22] A. W. Umrani, Y. L. Guan, and F. A. Umrani, "Effect of steering error vector and angular power distributions on beamforming and transmit diversity systems in correlated fading channel," in *Progress in Electromagnetic Research (PIER)*, vol. 105, pp. 383–402, 2010. http://piers.org/piers/.
- [23] A. W. Umrani and Y. L. Guan, "Performance of direct sequence cdma for uniform linear and uniform circular antenna arrays in a cellular radio environment," *Mehran University Research Journal of Engineering and Technology (MURJ)*, vol. 29, no. 1, pp. 1–7, 2010.
- [24] F. A. Umrani, T. O'Farrell, and A. W. Umrani, "Performance analysis of pdc-ocdma system with apd mismatch," in Wireless Networks, Information Processing and Systems (D. Hussain, A. Rajput, B. Chowdhry, and Q. Gee, eds.), vol. 20 of Communications in Computer and Information Science, pp. 306–313, Springer Berlin Heidelberg, 2009.
- [25] U. F. Aziz, T. O'Farrell, and U. A. Waheed, "Performance analysis of pdc-ocdma system with apd mismatch," in *International Multi Topic Conference*, pp. 306–313, Springer, 2008.
- [26] A. W. Umrani and V. K. Dubey, "Corrections to "ber performance of a uniform circular array versus a uniform linear array in a mobile radio environment"," IEEE Transactions on Wireless Communications, vol. 5, pp. 732–732, April 2006.
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- [29] A. W. Umrani and V. K. Dubey, "Effect of angle of arrival on transmit diversity and beamforming systems under correlated fading," in IEEE/Sarnoff Symposium on Advances in Wired and Wireless Communication, pp. 109–112, April 2005.
- [30] A. W. Umrani and V. K. Dubey, "Effect of angle of arrival on transmit diversity and beamforming systems under correlated fading," *Electronics Letters*, vol. 41, pp. 293–294, March 2005.
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- [34] A. W. Umrani and V. K. Dubey, "Deterministic simulations of spatial fading correlation for mimo communication channels," in 7th International Multi Topic Conference (INMIC), pp. 78–83, December 2003.
- [35] A. W. Umrani and V. K. Dubey, "Uplink spatial fading correlation of mimo channel," in IEEE 58th Vehicular Technology Conference (VTC), vol. 1, pp. 94–98, October 2003.
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- [39] S. M. A. Shah, F. A. Umrani, S. Mohsin, and A. W. Umrani, "Critical node detection in wsn based on energy consumption," vol. 2, pp. 259–262, 2017.
- [40] B. Muneer, A. Sensong, A. W. Umrani, F. K. Shaikh, and U. Ahmed, "A generalized approach to analyze broadband arrow-shaped loaded-stub phase shifters," July 2016.