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Junaid Ahmed

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Summary:
Twenty years of academic and industrial experience in the USA and Pakistan. Successfully supervised 01 PhD and 11 MSc students in their thesis. Areas of strength include wireless communication, embedded systems, artificial intelligence and machine learning.

Education:
PhD in Electrical & Electronics Engineering, University of Manchester, Manchester, UK,   2011
Area of research is Wireless Communications.

Master in Electrical Engineering, Oklahoma State University, Stillwater, Oklahoma, USA,   2000
Majoring in Digital Signal Processing, Image Processing, Telecommunication systems

Bachelor of Electrical and Electronics Engg, Middle East Technical University, Ankara, Turkey,   1997
Majoring in Telecommunication Systems and Computer Architecture.

Professional Experience:
Tenured Associate Professor, COMSATS University Islamabad   2004-2007 and 2012-present
- Taught courses in real-time embedded systems, system programming in C/C++ on Linux machines, computer architecture, wireless communication and operating systems.
- As associate head of department, I allocated courses and other duties to 100+ faculty, filled their annual appraisals, resolved conflicts, counselled students and advised their parents etc.

Senior Software Engineer,   Streaming Networks, Islamabad   2003-2004
- Ported and Optimized MP2, MP3, AAC audio codecs and G.723, G.729, G.711, G.728 and G.722 speech codecs in embedded C on Nexperia DSP that uses pSos.
- Worked with Agile methodologies and followed test-driven development practices to ensure high-quality code.

Embedded Software Engineer,   General Bandwidth, Austin, Texas, USA   2000-2002
Accomplishments in the **user-plane** group while working on voice gateway called G6 using embedded C++ and vxWorks RTOS. (G6 uses Freescale's MPC 8260 processors):
- Significantly improved fax and modem throughput by %250 along with %100 increase in reliability in voice over IP to PSTN calls, where VoIP side had cable interface (DOCSIS 1.1) and PSTN side could have T1 (GR303/TR08/T1CAS) or E1 (V5.2).
- Improved jitter performance by %60 on the ATM interface of the voice gateway by proposing and implementing a short-term solution with proposal for a long-term solution.
- Resolved degraded voice quality problem during certain configurations for PSTN to voice over DSL calls going through the voice gateway.
- Lead team to develop loop emulation service using embedded operations channel (LES-EOC) on the gateway to configure and monitor customer premise equipment (CPE) using SNMP protocol.
- Designed fax relay (T.38) and modem relay support for fax and modem calls in a VoCable system using G6 voice gateway.
- Worked on development of COPS using sockets on G6 voice gateway enabling the gateway to work as a gatekeeper to negotiate voice calls.
- Developed IP over ATM stack using RTP / UDP / IP / AAL5 using RFC 1483/ 2684 encapsulation for voice over IP application.

- Understanding of software lifecycle and TL9000 procedures and took part in all phases of software development including architecture, design, development, testing (unit, integration and regression), release, troubleshooting both before and after release.
- Debugged and resolved issues in the production environment using advanced debugging tools.
- Followed Agile development methodologies and test-driven development practices to deliver high-quality code.

Accomplishments in **OAM&P / Management-plane** group:
- Developed fault, alarm and event reporting subsystem that sends events to operator and logs them for future use.
- Developed clock management subsystem that configures, monitors and switches system-clock on detection of faults.
- Developed device drivers for FPGA's and other hardware.
- Contributed to the development of a large-scale C++ application that utilized multi-threaded programming.

Teaching and Research Assistant, Oklahoma Imaging Lab, Stillwater OK, USA   1999- 2000
- Researched and developed object-based image compression and coding methods using nominal processing power.
- Researched Image segmentation methods in image compression.

Software Engineer,   Crescent Software Islamabad   1998- 1999
All development was done in embedded C/C++ using pSos RTOS on Nexperia processors.
- Reduced the processing power requirement of the G.729a codec by %25 by profiling and optimizing the software for the VLIW architecture-based DSP.
- Worked on integration of G.723, G.729, G.711, G.728 and G.722 speech codecs for a video conferencing application using H.323 protocol.
- Developed API for H.261 video coder and above-mentioned speech codecs.

Journals Publications

#	Publication Details	Impact Factor
1.	"On the Physical Layer Security of Federated Learning based IoMT Networks" Junaid Ahmed, Tu N. Nguyen, Bakhtiar Ali, Muhammad Awais Javed, and Jawad Mirza, IEEE Journal of Biomedical and Health Informatics, vol. 27, no. 2, pp. 691-697, Feb. 2023, doi: 10.1109/JBHI.2022.3173947.	5.772
2.	"Reliable Communications for Cybertwin driven 6G IoVs using Intelligent Reflecting Surfaces" Muhammad Awais Javed, Tu N. Nguyen, Jawad Mirza, Junaid Ahmed, Bakhtiar Ali. IEEE Transactions on Industrial Informatics 2022, doi: 10.1109/TII.2022.3151773.	9.112
3.	"Performance analysis of coverage-centric heterogeneous cellular networks using dual-slope path loss model", Khurram Shehzad, Noor M Khan, Junaid Ahmed, Elsevier Computer Networks, vol 185, Feb 2021.	4.474
4.	"Efficiency analysis of a K-tier clustered HCN using dual connectivity with DUDe access", Mohammad Arif, Shurjeel Wyne, Junaid Ahmed AEU - International Journal of Electronics and Communications, Volume 123, 2020, 153291, ISSN 1434-8411,	2.924
5.	"Stochastic Geometry Modeling of Cellular V2X Communication over Shared Channels," Muhammad Nadeem Sial, Yansha Deng, Junaid Ahmed, Arumugam Nallanathan, Mischa Dohler, IEEE Transactions on Vehicular Technology, vol. 68, no. 12, pp. 11873-11887, Dec. 2019. doi: 10.1109/TVT.2019.2945481	5.978
6.	"Impact of Frequency Reuse and Flexible Cell Association on the Performance of Dense Heterogeneous Cellular Networks Using Dual-Slope Path Loss Model", Khurram Shehzad; Noor Muhammad Khan; Junaid Ahmed, IEEE Access, vol. 7, pp. 166214-166234, Nov 2019.	3.367
7.	"Performance analysis of downlink and uplink decoupled access in , clustered heterogeneous cellular networks" Mohammad Arif, Shurjeel Wyne, Junaid Ahmed, Telecommunication Systems, Springer, USA, 72, 355–364 (2019).	1.734

8.	"A Realistic Uplink–Downlink Coupled and Decoupled User Association Technique for K-tier 5G HetNets" Muhammad Nadeem Sial, Junaid Ahmed. Arabian Journal for Science and Engineering, Springer 2018	2.334
9.	"GA based Estimation of Sparse MIMO Channels with Superimposed Training", Babar Mansoor, Moazzam I. Tiwana, Syed Junaid Nawaz, and Junaid Ahmed. Journal Electronics and Electrical Engineering (Elektronika ir Elektrotechnika), 2018	0.707
10.	"Thou should not panic! Let calmness fight the Crocodile Bite", Usman Ayub, Uzma Qaddus, Muhammad Zakaria, Attayah Shafique, Junaid Ahmed, Physica A: Statistical Mechanics and its Applications, Volume 509, 2018, Pages 302-315, ISSN 0378-4371, DOI: 10.1016/j.physa.2018.06.040.	2.924
11.	"A novel model for minimizing unnecessary handover in heterogeneous networks", Babatunji Omoniwa, Riaz Hussain, Junaid Ahmed, Adeel Iqbal, Ahmed Murkaz, Qadeer Ul-Hasan, Shahzad Ali Malik. Turk Journal Elec Eng & Comp Sci, TUBITAK, Turkey, vol. 26, no 6, pp. 1771-1782, July 2018. DOI: 10.3906/elk-1710-200	0.806
12.	"Ergodic Capacity of D2D Underlay Communication using MC-CDMA", Junaid Ahmed, Shurjeel Wyne. Radioengineering, vol. 27, no. 1, pp 292-297, April 2018.	1.076
13.	"On the Secrecy Performance of SWIPT Receiver Architectures with Multiple Eavesdroppers," Furqan Jameel, Shurjeel Wyne, Syed Junaid Nawaz, Junaid Ahmed, and Kanapathippillai Cumanan. Wireless Communications and Mobile Computing, Volume 2018, Article ID 8747420, DOI: 10.1155/2018/8747420	2.336
14.	"Efficient Idle Channel Discovery Mechanism through Cooperative Parallel Sensing in Cognitive Radio Network" Irfan Latif khan, Riaz Hussain, Atif Shakeel, Adeel Iqbal, Junaid Ahmed, Shakeel Alvi, Qadeer ul Hasan, Shahzad A. Malik. EURASIP Journal on Wireless Communications and Networking, vol. 2018, no. 1. DOI: 10.1186/s13638-018-1082-9.	1.408
15.	"An intra–inter-cell device-to-device communication scheme to enhance 5G network throughput with delay modeling", Ahmed Murkaz, Riaz Hussain, Junaid Ahmed, Muhammad Adil Babatunji Omoniwa, Adeel Iqbal. Telecommunication Systems, Springer, USA, pp. 1–15, 2018. DOI: 10.1007/s11235-018-0449-x.	1.734
16.	"Risks reduction control techniques analysis in type-1 diabetes" Hajra Arif, Sana Shuja, Asim D. Bakhshi, Ali Khaqan1, Qadeer ul Hasan, Shahzad A. Malik, Junaid Ahmed, Raja Ali Riaz. Biomedical Research, vol 29, issue 8, 2018.	0.219
17.	"Spectral Efficiency Comparison of Asynchronous MC-CDMA, MC DS-CDMA and MT-CDMA with Carrier Frequency Offset", Junaid Ahmed, Arabian Journal for Science and Engineering, Springer 2018. DOI: 10.1007/s13369-018-3123-4.	2.334
18.	"A Novel and Realistic Hybrid Downlink-Uplink Coupled/ Decoupled Access Scheme for 5G HetNets", Nadeem Sial, Junaid Ahmed. Turk Journal Elec Eng & Comp Sci, TUBITAK, Turkey, vol. 25, no 6, pp. 4457–4473, 2017. DOI:10.3906/elk-1612-167.	0.806
19.	"Analysis of K-tier 5G heterogeneous cellular network with dual-connectivity and uplink–downlink decoupled access", Nadeem Sial, Junaid Ahmed. Telecommunication Systems, Springer, USA, August 2017, Volume 67, Issue 4, pp 669–685. DOI: 10.1007/s11235-017-0368-2.	1.734
20.	"Performance of Uncoordinated Coexistence Mechanisms in Adhoc Networks", Junaid Ahmed, Khairi. A. Hamdi, Sarmad Sohaib. Telecommunication Systems, Springer, USA, August 2017, Volume 67, Issue 4, pp 733–743. DOI 10.1007/s11235-017-0361-9.	1.734
21.	"Spectral Efficiency Comparison of OFDM and MC-CDMA with Carrier Frequency Offset", Junaid Ahmed. Radioenginering. Czech Republic, vol. 26, No. 1, pp. 221-226. April 2017. DOI: 10.13164/re.2017.0221.	1.076
22.	"Energy and area spectral efficiency trade-off for MC-CDMA with carrier frequency offset", Junaid Ahmed, Moazzam Islam Tiwana, Omer Ahmed, Sarmad Sohaib. Turk Journal Elec Eng & Comp Sci. TUBITAK, Turkey, vol. 25, no 4, pp. 3052–3060, 2017. DOI:10.3906/elk-1608-285.	0.806

23.	"Sum rate enhancement and interference alignment for MIMO channels", Sarmad Sohaib, Faqir Najam-Ul-Hassan, Junaid Ahmed. Turk Journal Elec Eng & Comp Sci, TUBITAK, Turkey, vol. 25, no 3, pp. 2176–2184, 2017. DOI:10.3906/elk-1604-96.	0.806
24.	"Spectral Efficiency of Asynchronous MC-CDMA with Frequency Offset over Correlated Fading," Junaid Ahmed K. A. Hamdi. IEEE Transactions on Vehicular Technology, IEEE USA, vol. 62, issue. 7. pp. 3423–3429. Sep. 2013. DOI: 10.1109/TVT.2013.2253339	5.978

References: Will be provided on request.