

Dr. Qasim Sultan

Wireless Algorithm Engineer
Qualcomm, UK

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Professional Summary

Experienced Wireless Algorithm Engineer with a strong foundation in 5G/6G cellular systems, non-terrestrial networks, and Bluetooth technologies. Proven expertise in developing high-performance simulations and implementing advanced signal processing techniques. Background in both academic research and industry application, including successful projects at Qualcomm, Huawei and Chung-Ang University. Recognized for innovation with awards and scholarships throughout academic and professional career.

Work Experience

- **Qualcomm, Bristol, UK**
  Staff Engineer 08th September 2025 - present

  - Designed and analyzed advanced signal processing algorithms for next-generation wireless communication systems, with a focus on Bluetooth PHY.
  - Developed optimized floating-point and fixed-point implementations to enable efficient hardware realization while balancing performance, power, and silicon constraints.
  - Collaborated closely with RTL and verification teams to debug complex system-level issues, accelerating design validation and tape-out readiness.
  - Represented company interests within the Bluetooth SIG by proposing innovative features, evaluating external technical contributions, and building data-driven arguments to influence standardization outcomes.

- **Huawei, Singapore**
  Wireless Algorithm Engineer 02nd August 2022 - 04th September 2025

  - Designed, analyzed, and simulated advanced signal processing algorithms for next-generation indoor wireless systems, with a focus on Bluetooth and Sparklink/Nearlink technologies.
  - Developed innovative downlink synchronization schemes to streamline initialization and reduce complexity in short-range wireless networks.
  - Implemented PHY algorithms for High Data Throughput (HDT), including optimized fixed-point implementations for resource-constrained environments.
  - Monitored Bluetooth SIG standardization developments, ensuring alignment of algorithms with industry standards.
  - Awarded the **Future Star Award** for contributions to Bluetooth standardization and improvements in data throughput.
  - Developed a timing tracking algorithm for Bluetooth Long Range and Nearlink technologies, successfully deployed in over 2.3 million devices worldwide.
  - Actively participated in Bluetooth SIG standardization meetings to stay abreast of the latest technical developments and contribute to future feature discussions.

- **Chung Ang University, Seoul, South Korea**
  Graduate Research Associate 28th August 2017 - 31st July 2022

Focused on 5G/6G Cellular Systems, Beamforming, and Non-Terrestrial Networks.

  - Conducted research on 5G/6G (LTE/NR) cellular systems, underwater communication, and millimeter-wave beamforming/beam tracking as part of industry and government-sponsored projects.
  - Developed synchronization schemes to streamline initialization and enhance performance in non-terrestrial network (NTN) applications for a major project with **Asia Pacific Satellite Inc.**
  - Led algorithm development for downlink synchronization, including Carrier Frequency Offset (CFO) and Symbol Timing Offset (STO) tracking, as well as Random Access protocols for NR

modem design.
- Implemented fixed-point algorithms to optimize performance for resource-constrained environments.
- Managed project milestones and report submissions for government stakeholders, while supporting proposal and grant writing efforts.
- Mentored undergraduate students, guiding them in project-based learning and fundamental research skills.

Education

2017-2022

MS LEADING PHD IN ELECTRICAL AND ELECTRONICS ENGINEERING
Chung-Ang University, Seoul, South Korea.
CGPA 4.32/4.5

2013-2017

BACHELORS OF ELECTRICAL (TELECOMMUNICATIONS) ENGINEERING
COMSATS University, Islamabad, Pakistan.
CGPA 3.3/4

Journal Publications

1. M. S. Khan, Y. J. Kim, **Q. Sultan**, J. Joung and Y. S. Cho, "Downlink Synchronization for OTFS-Based Cellular Systems in High Doppler Environments," in IEEE Access, vol. 9, pp. 73575-73589, 2021.
2. **Q. Sultan**, Y.-J. Kim, M.-S. Khan, and Y.-S. Cho, “Fast Beam Training Technique for Millimeter-Wave Cellular Systems with an Intelligent Reflective Surface,” *Sensors*, vol. 21, no. 14, p. 4936, Jul. 2021.
3. **Q. Sultan**, M. S. Khan and Y. S. Cho, "Fast 3D Beamforming Technique for Millimeter-Wave Cellular Systems With Uniform Planar Arrays," in IEEE Access, vol. 8, pp. 123469-123482, 2020.
4. Y. J. Kim, **Q. Sultan** and Y. S. Cho, "Pilot Sequence Design for mmWave Cellular Systems With Relay Stations in the Presence of Blockage," in IEEE Access, vol. 8, pp. 80454-80467, 2020.

Conference Publications

1. **Q. Sultan,** S. Ha, S. Choi and Y. S. Cho, "Downlink Synchronization in New Radio (NR) Non-Terrestrial Networks (NTN)," 2022 13th International Conference on Information and Communication Technology Convergence (ICTC), Jeju Island, Korea, Republic of, 2022, pp. 1351-1353.
2. **Q. Sultan**, Y.-J. Kim, M. S. Khan and Y. S. Cho, " Fast Beam Search for IRS-Assisted Cellular Systems," 2021 International Conference on Information and Communication Technology Convergence (ICTC), Jeju, Korea (South), 2021.
3. **Q. Sultan**, M. S. Khan and Y. S. Cho, "Fast Beamforming Technique for Large Antenna Arrays," 2020 International Conference on Information and Communication Technology Convergence (ICTC), Jeju, Korea (South), 2020, pp. 45-47.
4. M. Saquib Khan, **Q. Sultan** and Y. Soo Cho, "Position and Machine Learning-Aided Beam Prediction and Selection Technique in Millimeter-Wave Cellular System," 2020 International Conference on Information and Communication Technology Convergence (ICTC), Jeju, Korea (South), 2020, pp. 603-605.
5. Y. J. Kim, **Q. Sultan** and Y. S. Cho, "Pilot-based Sequence Design to Overcome a Blockage in mmWave Cellular Systems," 2020 International Conference on Information and Communication Technology Convergence (ICTC), Jeju, Korea (South), 2020, pp. 42-44.
6. **Q. Sultan** and Y. S. Cho, " Beam Search Algorithm for Large Antenna Arrays Reducing Beam Search Time," in KICS Winter, Feb 2020.
7. Y. J. Kim, **Q. Sultan** and Y. S. Cho, " Relay-Assisted mmWave Cellular System for Overcoming Blockage Problem," in KICS Winter, Feb 2020.
8. M. S. Khan, M. Asim, **Q. Sultan** and Y. S. Cho, “Cell Selection Technique for 5G Millimeter-Wave Cellular Systems,” in Proc. 2017 IEEE Veh. Tech. Conf. (VTC Fall), Chicago: United States of America, Aug. 2018.

Development and Technical Skills	**Programming Skills:** ▪ MATLAB ▪ C/C++ ▪ Python	**Protocol:** ▪ 5G/6G ▪ Bluetooth ▪ Non-terrestrial networks
Certifications:	▪ Object Oriented Data Structures in C++ ▪ Introduction to Deep Learning by Coursera ▪ CCNA (Routing and Switching) from CISCO Academy ▪ PH125.1x: Data Science: R Basics by HarvardX ▪ Machine Learning by Stanford University(via Coursera) ▪ Introduction to IOT by CISCO Netacad ▪ Introduction to Mathematical Thinking from Stanford University via Coursera ▪ Technical Writing by Unison Academy ▪ A Crash Course on Creativity by VENTURE's LAB	
Achievements and Recognitions	▪ Chung-Ang University Young Scientist Scholarship(CAYSS) for Masters and Ph.D. ▪ BK(Brain Korea)-21 fellowship	
Invited Talks	• "Beamforming for advanced communications systems", Calian SED, Saskatoon, Canada.	
Other Academic Project(s)	• OFDM Implementation and Performance Analysis using MATLAB, LabVIEW and USRP Kit (Undergraduage Final Year Project) • GSM Controlled Robotic Car • Implementation of AVR Training Board Hardware having LCD, ATmega 16,Relays and other components • Micro-strip Patch Antenna • Stereo Amplifier with Equalizers • Implementation of AM and FM Modulation/Demodulation using MATLAB GUI • Design & Implementation of Audio Equalizer on MATLAB Simulink Model on DSK6713 • Child's Lamp using LDR • Water level Indicator using basic circuit analysis	
References	References can be furnished upon request.	