

Syeda Fizzah Jilani

Contact

Official Address

Engineering Science Research Building, 5708 ESRB-Barrows Hall, University of Maine, Orono, ME, USA, 04469

Home Address

1 Hudson street, Apart. 1726, ME, USA, 04473

+1 (207) 307 9190
syeda.jilani@maine.edu
s.f.jilani@qmul.ac.uk

Languages

Jrdu (native)
English (fluent)

Languages and scripts

∩, MATLAB, MS office

Simulation tools

- Keysight ADS
- Ansys HFSS
- CST Microwave Studio
- Proteus Design Suite
- PCB Wizard
- NI Multisim
- AutoCAD
- Adobe Illustrator

Hands-on Experience

- Inkjet printing
- Flexo-printing
- Screen printing
- Etching
- PCB prototyping
- Laser cutting
- 3D printing
- Conductive Embroidery Machine

Instruments

- PNA network analyser
- Oscilloscope
- LPKF PCB milling machine
- LPKF protoMAT Laser
- Dimatix Inkjet Printer
- Laser cutter
- 3D Printer
- Compact Antenna Test Range (CATR)
- Near-field Planar Scanner
- Spherical Scanners
- Far-field measurements
- Quasi-optic bench
- Material characterisation chamber
- Cascade probe station

Projects and Research

Research Scientist

Feb.2019–Present

ME, United States of America

- Sensor systems for ground-breaking applications
- Design and implementation of harsh environment surface acoustic wave (SAW) sensors

**Frontier Institute for Research in Sensor Technologies (FIRST),
University of Maine, ME, USA**

Research Assistant

Jan.2015–Jan. 2019

London, United Kingdom

Antenna and Electromagnetics Research Group, School of Electronic Engineering and Computer Science, Queen Mary University of London

- **Numerical and Experimental Investigation of Implant Antennas and Wearable Radio Front-end.** QMUL, Life Sciences Initiative Proof of Concept fund Mar. 2018 – Jan. 2019
 - Working with physical human phantoms, and designing body-centric antenna front-ends.
 - Algorithm analysis and numerical computation to localise the implantable antenna in human body.
- **Millimetre-Wave 5G Antenna Arrays and Flexible Electronics.** Qatar National Research Fund, Apr. 2017 – Jan. 2018
 - Millimetre-wave antenna array has been designed by utilising leaky-wave antenna to enhance the span of radiation and implemented at wearable gadget for 5G applications.
 - Design of compact antenna arrays for 5G cellular applications is also part of research.
- **AMMETEX: Advanced Material Structures for Meta-Textile.** Qatar National Research Fund, May. 2016 – Dec. 2016
 - The research includes design and implementation of flexible meta-surfaces at 60GHz to offer a secure point-to-point communication link.
 - Inkjet printing, flexo-printing and screen printing have been implemented and optimised by using conductive inks and pastes consisting of silver and copper nanoparticles.
 - Flexible thin sheets of polyamides and polysters have been examined for printing purposes.

PhD in Electronic Engineering

- Thesis Title: Design, Modelling and Characterisation of Millimetre-wave Antennas for 5G Wireless Applications
- Ka-band high bandwidth and high gain patch antenna designs for 5G.
- Frequency reconfigurable antenna design at millimetre-wave spectrum for 5G.
- Beam-scanning leaky-wave flexible antenna design for 5G wearable applications.
- Multiband antenna arrays design offering high gain and compact size for 5G bands.
- Integration of millimetre-wave reconfigurable antennas on conformal and flexible substrates.

MS in Electrical Engineering

- *Star-shaped Fractal Design of Rectangular Patch Antenna for High Gain and Bandwidth.* Theory, Modelling, Simulation, Fabrication and Testing (Major current Research Area)
- Study and simulation of Micro-Electromechanical (MEMS) devices and circuits
- Study of MEMS Phase Shifter and Microbolometer (an Infrared sensor)

BE in Electrical Engineering

- *Design and modelling of of Rectenna for Wireless Power Transmission in HFSS*
- Study of GSM Network in Ufone, 500 KV Grid Station, Electrical load forecast of a Housing Society (Survey and Calculations), Design of LDR circuits for Automatic Street Light Control Systems, Logic Control Circuit Design for ink-jet printer.

Education

PhD in Electronic Engineering

Antennas and Electromagnetics, EECS.
Supervisor: Dr Akram Alomainy

Jan. 2015–Oct. 2018

Queen Mary University of London, (QMUL), United Kingdom.

MS Electrical Engineering (CGPA 3.4/4) (In RF/ Microwaves and Solid State Electronics)

Sep.2010–Jun.2013

National University of Sciences and Technology (NUST), Pakistan

BE Electrical Engineering (A+Grade)

(In Electronics, RF and Communication Systems)

Nov.2005–Aug.2010

University College of Engg. & Tech., Bahauddin Zakariya University, Multan, Pakistan

Academic Awards

- Finalist in Student Paper Competition, *Loughborough Antennas & Propagation Conf. (LAPC)*, 2017
- Finalist in Student Paper Competition, *IEEE International Symp. Antennas Propag. Soc.*, 2017
- 3rd Best Student Paper Award, *Loughborough Antennas & Propagation Conference (LAPC)*, 2016

Academic/research activities

- Registered Member of Pakistan Engineering Council Registration Number ELECT/33718
- Student member IEEE and IET
- **Active Reviewer of journals:** Nature Communications, IEEE Access, IEEE Antenna and Wireless Propagation Letters, Advanced Electromagnetics, IET Microwaves, Antennas & Propagation, Wireless Communications and Mobile Computing, International Journal of Microwave and Wireless Technologies, International Journal of Antennas and Propagation, International Journal of Systems, Control and Communications (IJSCC).

Workshops and Professional Trainings

- Wideband and Multiband Antennas and Arrays for Civil Security and Military Applications (IET, UK) 2nd Dec. 2015
- ESoA: "Antenna Measurements at Millimetre and Submillimetre Wavelengths" (Aalto University, Finland) 4-8 May 2015
- Professional Workshop on Antenna Theory, Design and Measurement (RIMMS, NUST, Pak.) 20-21 Sep. 2012
- Professional Workshop on RF & Microwave Circuits, Theory and Design (RIMMS, NUST, Pak.) 17-19 Sep. 2012
- Technology Workshop on Atomic Physics and Nanofabrication in NELOP (PIEAS, Pak.) 3-5 Apr. 2012
- Internship in Pakistan Telecommunication (PTCL) 1st Jun.-15th Jul. 2009

Research Interests

- 5G, millimetre-wave communication, cognitive radio.
- Antenna theory, design and modelling, patch antennas and arrays, wideband and high gain antennas and arrays.
- Fractal antennas, slotted antennas, Defected ground structures (DGS), MIMO antennas.
- Wearable antennas, Conformal and flexible antennas, antennas for on-body communication.
- Metamaterials and metasurfaces, waveguides, RF filters and phase shifters.
- Surface acoustic-wave devices such as temperature and strain sensors.

Research Publications

Book Chapters

1. **S. F. Jilani**, Q. H. Abbasi, and A. Alomainy, "Millimetre Wave Flexible Wearable Antenna Design and Challenges," *Low Electromagnetic Emission Wireless Network Technologies: 5G and Beyond*, The IET. (Chapter submitted)
2. **S. F. Jilani**, Q. H. Abbasi, and A. Alomainy, "Millimetre Wave Antenna Designs for 5G Applications," *5G Reference*, Wiley. (Chapter submitted)

Journals

1. **S. F. Jilani et al.**, "A 60-GHz ultra-thin and flexible metasurface for frequency-selective wireless applications," *Applied Sciences, Special Issue: Frequency Selective Surfaces*, 9(5), 945; 2019, <https://doi.org/10.3390/app9050945>
2. O P Falade*, **S. F. Jilani* et al.**, "Design and characterisation of a screen-printed millimetre-wave flexible metasurface using copper ink for communication applications," *Flexible and Printed Electronics-IOPscience* doi.org/10.1088/2058-8585/aaf0eb
3. **S. F. Jilani et al.**, "Millimeter-wave liquid crystal polymer based antenna array for conformal 5G applications," *IEEE Antennas and Wireless Propagation letters*. vol. 18, no. 1, pp. 84-88, Jan. 2019. DOI: 10.1109/LAWP.2018.2881303
4. **S. F. Jilani et al.**, "Flexible and low-profile inkjet-printed frequency-reconfigurable millimeter-wave MIMO antenna for 5G applications," *Flexible and Printed Electronics-IOPscience*, vol. 3, 035003 2018. doi.org/10.1088/2058-8585/aad392
5. **S. F. Jilani et al.**, "A Ka-band antenna based on advanced Franklin array model for 5G cellular networks," *Microwave and Optical Technology Letters*, vol. 60, pp. 1562–1566, 2018, doi.org/10.1002/mop.31194.
6. **S. F. Jilani** and A. Alomainy, "Millimetre-wave T-shaped MIMO antenna with defected ground structures for 5G cellular networks," *IET Microwaves, Antennas & Propagation*, pp.1-6, 2018, DOI: 10.1049/iet-map.2017.0467.
7. **S. F. Jilani** and A. Alomainy, "A multiband millimetre-wave two-dimensional array based on enhanced Franklin antenna for 5G wireless systems," *IEEE Antennas and Wireless Propagation Letters*, vol. 16, pp. 2983-2986, 2017.
8. M. N. Iqbal, H.-U. Rahman and **S. F. Jilani**, "An ultrawideband monopole fractal Antenna with coplanar waveguide feed", *International Journal of Antennas and Propagation*, vol. 2014, Article ID 510913, 7 pages, Mar. 2014.

Conference Proceedings

1. A. Abohmra, **S. F. Jilani et al.**, "Low-profile flexible perovskite based millimetre wave antenna," *Int. Microwave Bio-Conference (IMBioC)*, May, 2019 (**3rd Best Student Paper Award**)
2. A. Rahimian, **S. F. Jilani et al.**, "A millimetre-wave two-dimensional 64-element array for large-scale 5G antenna subsystems", *13th European Conf. Antennas and Propag. (EuCAP)*, 31st Mar.- 5th Apr. 2019, pp.1-2.
3. **S. F. Jilani et al.**, "Ka-band flexible Koch fractal antenna with defected ground structure for 5G wearable and conformal applications," *IEEE Int. Symp. Personal, Indoor and Mobile Radio Commun., (PIMRC 2018)*, 2018, pp. 361-364.
4. **S. F. Jilani**, Q. H. Abbasi, and A. Alomainy, "Inkjet-printed millimetre-wave PET-based flexible antenna for 5G wireless applications," *IEEE MTT-S Int. Microwave Workshop Series on 5G Hardware and System Technol.*, 2018, pp.1-3.
5. A. K. Aziz, **S. F. Jilani et al.**, "High Sensitivity Inkjet-Printed Terahertz Metallic Hole Array Sensor," *12th European Conf. Antennas and Propag. (EuCAP)*, 2018, pp. 1-3.
6. Z. U. Khan, **S. F. Jilani et al.**, "Empty substrate integrated waveguide-fed MMW aperture-coupled patch antenna for 5G applications," *12th European Conf. Antennas and Propag. (EuCAP)*, 2018, pp. 1-3.
7. **S. F. Jilani** and A. Alomainy, "An inkjet-printed MMW frequency-reconfigurable antenna on a flexible PET substrate for 5G wireless systems," *Loughborough Antennas Propag. Conf. (LAPC)*, 2017, pp. 1-3 (**Finalist-Student Paper Competition**)
8. **S. F. Jilani** and A. Alomainy, "Millimeter-wave conformal antenna array for 5G wireless applications," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2017, pp. 1439-1440 (**Finalist-Student Paper Competition**)
9. M. T. Hafeez, and **S. F. Jilani**, "Novel Millimeter-Wave Flexible Antenna for RF Energy Harvesting," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2017, pp. 2497-2498.
10. **S. F. Jilani** and A. Alomainy, "Millimetre-wave T-shaped antenna with defected ground structures for 5G wireless networks," *Loughborough Antennas & Propagation Conf. (LAPC)*, 2016, pp. 1-3. (**3rd Best Student Paper Award**)
11. **S. F. Jilani**, B. Greinke, Y. Hao and A. Alomainy, "Flexible millimetre-wave frequency reconfigurable antenna for wearable applications in 5G networks," *URSI Int. Symp. Electromagnetic Theory (EMTS)*, 2016, pp. 846-848.
12. **S. F. Jilani** and A. Alomainy, "Planar millimeter-wave antenna on low-cost flexible PET substrate for 5G applications," *10th European Conference on Antennas and Propagation (EuCAP)*, 2016, pp. 1-3.
13. A. d. C. Andrade, I. P. Fonseca, **S. F. Jilani** and A. Alomainy, "Reconfigurable textile-based ultra-wideband antenna for wearable applications," *10th European Conference on Antennas and Propagation (EuCAP)*, 2016, pp. 1-4.
14. **S. F. Jilani et al.**, "Millimeter-wave frequency reconfigurable T-shaped antenna for 5G networks," *IEEE 11th Int. Conf. Wireless Mobile Computing, Networking & Commun.(WiMob)*, 2015, pp. 100-102.
15. **S. F. Jilani**, H. Ur-Rahman and M. N. Iqbal, "Novel star-shaped fractal design of rectangular patch antenna for improved gain and bandwidth," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2013, pp. 1486-1487.
16. M. N. Iqbal, Hamood-Ur-Rahman and **S. F. Jilani**, "Novel compact wide band coplanar waveguide fed heptagonal fractal monopole antenna for wireless applications," *WAMICON 2013*, 2013, pp. 1-3.

Accepted Conference Proceedings

1. **S. F. Jilani et al.**, "Millimeter-wave compact and high-performance two-dimensional grid array for 5G application," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2019
2. I. I. Labiano, **S. F. Jilani et al.**, "Graphene-based textile ultra-wideband antennas for integrated and wearable applications," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2019
3. A. Abohmra, **S. F. Jilani et al.**, "High bandwidth perovskite based antenna for high- resolution biomedical imaging at tera-hertz," *IEEE Int. Symp. Antennas Propag. Society (APSURSI)*, 2019
4. A. Abohmra, **S. F. Jilani et al.**, "Flexible and Wearable Graphene Based Terahertz Antenna for Body Centric Applications" 2019 Second International Workshop on Mobile Terahertz Systems (IWMTS), 1-3 July 2019, Bad Neuenahr, Germany