Curriculum Vitae

- **Name: Farhan Abdul Ghaffar**

  Department/School/Program: Electrical Engineering/LUGC
  Present Rank/Title: Assistant Professor
  Date Tenured (if appropriate): N/A (Tenure-Track)
  Date of Appointment: August 1st, 2019

  Date: September 15th, 2021

- **Academic and Professional Qualifications:**

Degree	University	Year	Thesis Title (if applicable)
PhD	King Abdullah University of Science and Technology (KAUST)	2016	Theory and Design of Ferrite LTCC Based Tunable and Reconfigurable Microwave Components
MSc	King Abdullah University of Science and Technology (KAUST)	2010	Design of LTCC based Fractal Antennas
BE	NED University of Engineering and Technology	2007	N/A

- **Chronological Account of Career (beginning with most recent):**

Appointment Dates	Position/ Job Title	Employer
July 2020-Present	Adjunct Professor	Ontario Tech University
August 2019 – Present	Assistant Professor	Lakehead University
January 2017-July 2019	Postdoctoral Fellow/Instructor	Ontario Tech University
January 2008-July 2009	Assistant Manager	Space and Upper Atmosphere Research Commission of Pakistan (SUPARCO)

- **Honors and Awards:**

After joining Lakehead University:

Year	Award
2021	Paper selected in Student Paper Competition at ANTEM 2021 – (Noben Kumar Roy – my graduate student)
2021	Finalist of 3MT Competition at Lakehead University (Noben Kumar Roy – my graduate student)

Before joining Lakehead University:

Year	Award
2017	Honorable Mention at First ever 3MT Competition at IEEE IMS 2017
2017	Finalist in Advanced Practice Paper (APP) competition at IEEE IMS 2017
2013, 2015	KAUST Academic Excellence Award
2009-2016	KAUST Fellowship Award
2009	Annual Best Performance Award at SUPARCO

- **Publications:**

a) Life-time summary:

Patents: 4
Papers in Refereed Journals: 16
Papers under review or preparation for Refereed Journals: 2
Papers in Refereed Conference Proceedings: 24.....
Abstracts in Refereed Conference Proceedings: 1.....

b) Publication details:

Patents:

1. L. Roy, O. Sanusi, A. Shamim and F. A. Ghaffar, “Flexible antenna for a wireless radiation dosimeter”, US Patent 16268070, 2021.
2. M. Vaseem, F. A. Ghaffar and A. Shamim, “Iron oxide nanoparticle-based magnetic ink for additive manufacturing”, US Patent 62/633,416, 2020.
3. M. Hussain, A. Hussain, A. Shamim and F. A. Ghaffar, “Metal/Polymer based stretchable antenna for constant frequency far-field communication in wearable electronics”, US Patent, App. No. PCT/IB2016/055965, 2017.
4. A. Shamim, F. A. Ghaffar, M. U. Khalid and K. N. Salama, "Gain enhanced LTCC system-on-package for UMRR applications", US Patent 8860607, Oct 14, 2014.

Papers in Refereed Journals:

1. B. Yadegari and L. Roy and F. A. Ghaffar “A Versatile FG-MOSFET Inverter Design for X-Ray Radiation Dosimetry Applications”, *IEEE Transactions on Biomedical Circuits and Systems,* accepted on August 25th, 2021.

2. H. Xu, Y. Wang, F. A. Ghaffar and L. Roy, “Reconfigurable Microwave Filters implemented using Field Programmable Microwave Substrate (FPMS)”, *IEEE Transactions on Microwave Theory & Techniques*, vol. 69, no. 2, pp. 1344-1354, 2020.
3. F. A. Ghaffar, J. R. Bray, M. Vaseem, L. Roy and A. Shamim, “Theory and Design of Tunable Full-Mode and Half-Mode Ferrite Waveguide Isolators”, *IEEE Transactions on Magnetics*, vol. 55, no. 8, pp. 1-8, 2019.
4. O. Sanusi, F.A. Ghaffar, Y. Wang, A. Shamim and L. Roy, “Development of 2.45 GHz Antenna for Flexible Compact Radiation Dosimeter Tags”, *IEEE Transactions on Antennas & Propagation*, vol. 67, no. 8, pp. 5063-5072, 2018.
5. F. A. Ghaffar, M. Vaseem, L. Roy and A. Shamim, “Theory and Design of a Frequency and Polarization Reconfigurable Antenna on a Partially Magnetized Ferrite Substrate”, *IEEE Transactions on Antennas and Propagation*, vol. 66, no. 9, pp. 4866-4871, 2018.
6. D. Vincent, L. Roy, F. Ghaffar and J. R. Bray, “Electromagnetic Properties of LTCC-Ferrite in Microwave Range”, *The European Physical Journal Applied Physics*, 2018. (accepted)
7. M. Vaseem, F. A. Ghaffar, M. F. Farooqui and A. Shamim, “Iron Oxide Nanoparticle-Based Magnetic Ink Development for Fully Printed Tunable Radio-Frequency Devices”, *Advanced Materials Technologies,* vol. 3, no. 4, 2018.
8. A. A. Khan, G. Jayaswal, F. A. Ghaffar, and A. Shamim, "Metal-Insulator-Metal Diodes with sub-nm Surface Roughnes for Energy Harvesting Application", Journal of Microelectronic Engineering, 181, 34, 2017.
9. A. Nafe, F. A. Ghaffar, M. F. Farooqui, A. Shamim, “A Ferrite LTCC-Based Monolithic SIW Phased Antenna Array”, *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 1, 2017.
10. F. A. Ghaffar, A. Hussain, A. Shamim, S. I. Park, J. Rogers and M. M. Hussain, “Metal/Polymer based Stretchable Antenna for Constant Frequency Far Field Communication in Wearable Electronics”, *Advanced Functional Materials,* vol. 25, no. 42, pp. 6565-6575, 2015. (*Cover Article, Also this article has been in the news on IEEE Spectrum , Nature Middle East and Nanowerk websites)*
11. F. A. Ghaffar and A. Shamim, “A Partially Magnetized Ferrite LTCC Based SIW Phase Shifter for Phased Array Applications”, *IEEE Transactions on Magnetics*, vol.51, no.6, pp.1-8, 2015.
12. F. A. Ghaffar and A. Shamim, “A Ferrite LTCC Based Dual Purpose Helical Antenna Providing Bias for Tunability”, *IEEE Antennas and Wireless Propagation Letters*, vol. 14, pp. 831-834, 2015.
13. E. Arabi, F. A. Ghaffar, A. Shamim, “Tunable Bandpass Filter based on Partially Magnetized Ferrite with Embedded Windings for SoP Applications”, *IEEE Microwave & Wireless Components Letters,* vol. 25, no.1, pp.16-18, 2015.
14. F. A. Ghaffar, J. R. Bray and A. Shamim, “Theory and Design of a Tunable Antenna on a Partially Magnetized Ferrite LTCC Substrate”, *IEEE Transactions on Antennas & Propagation*, vol.62, no.3, pp.1238-1245, 2014.
15. F. A. Ghaffar and A. Shamim, “Design of Silicon-Based Fractal Antennas”, *Microwave Optical Technology Letters,* Vol. 55, No. 1, pp.180-186, 2013.

16. F. A. Ghaffar, M. U. Khalid, K. N. Salama and A. Shamim, “24 GHz LTCC Fractal Antenna Array SoP with Integrated Fresnel Lens”, *IEEE Antennas and Wireless Propagation Letter*, vol. 10, no. 10, pp. 705- 708, 2011.

Papers submitted or under review in Refereed Journals: (provide date)

1. D-R. Loqx, O. Lafond, M. Himdi, L. Roy and F. A. Ghaffar, “Reconfigurable half mode SIW antenna using uniaxial FPMS structure”, *IEEE Transactions on Antennas and Propagation*, submitted on June 17, 2021.

Papers under preparation for submission in Refereed Journals:

1. N. K. Roy and F. A. Ghaffar, “A Microstrip Line based Leaky Wave Antenna realized with the help of FPMS unit cells”, *IEEE Transactions on Antennas and Propagation*, to be submitted in December 2021.

- **Conference Papers:**

Papers in Refereed Conference Proceedings:

1. S. Ali, F. A. Ghaffar, and, H. M. Cheema, “Beam Steerable Leaky Wave Antenna using FPMS”, *IEEE* International Symposium on Antennas and Propagation *(APS/URSI)*, 2021. (Accepted: to be presented in December, 2021)
2. N. Roy and F. A. Ghaffar, “A Novel Microstrip Line Based Leaky Wave Antenna using Capacitive Loading”, *IEEE* International Symposium on Antenna Technology and Applied Electromagnetics *(ANTEM)*, 2021. (Accepted)
3. O. Sanusi, L. Roy and F. A. Ghaffar, “Impact of Blood Environment on Integrated Antenna Performance”, International Applied Computational Electromagnetics Society Symposium *(ACES)*, 2020.
4. F. A. Ghaffar, L. Roy and A. Shamim, “A Wideband Fully Planar Vivaldi Antenna for WPAN Applications”, *IEEE* International Symposium on Antenna Technology and Applied Electromagnetics *(ANTEM)*, 2018.
5. B. Yazidgari, O. Sanusi, F. A. Ghaffar, A. Shamim, L. Roy and A. Shamim, “An Efficient and Compact Wireless Solution for Blood Sterilization Apparatus”, *IEEE* International Symposium on Antenna Technology and Applied Electromagnetics *(ANTEM)*, 2018.
6. F. A. Ghaffar, M. Vaseem, J. Bray and A. Shamim, “A Half-Mode Inkjet Printed Tunable Ferrite Isolator”, *IEEE MTT-S International Microwave Symposium (IMS)*, 2017. (Accepted)
7. O. Sanusi, F. A. Ghaffar, Y. Wang, A. Shamim and L. Roy, “Development of 2.45 GHz Compact Antenna for Wireless Sensor”, *IEEE International Conference on Electromagnetics in Advanced Applications*, 2017. (Accepted)
8. S. Zhen, F. A. Ghaffar, M. F. Farooqui, R. M. Bilal and A. Shamim, “Design Methodology of Single-feed Compact Near-Isotropic Antenna Design”, *IEEE European Conference on Antennas and Propagation (EuCAP)*, 2017.

9. F. A. Ghaffar, A. Nafe and A. Shamim, “Ferrite LTCC based Phased Array Antennas”, *IEEE International Symposium on Antennas and Propagation* (*APS/URSI)*, pp. 1135-1136, 2016.
10. F. A. Ghaffar, M. Vaseem, M. F. Farooqui and A. Shamim “A Fully Printed Ferrite Nano-Particle Ink Based Tunable Antenna”, *IEEE International Symposium on Antennas and Propagation* (*APS/URSI)*, pp. 1059-1060, 2016.
11. F. A. Ghaffar, S. Yang, H. M. Cheema and A. Shamim, "A 24 GHz CMOS Oscillator Transmitter with an Inkjet Printed On-chip Antenna", *IEEE MTT-S International Microwave Symposium (IMS)*, pp. 1-3, 2016.
12. F. A. Ghaffar, M. Vaseem and A. Shamim, “A Ferrite Nanoparticle Based Printing Process for Tunable Microwave Components", *IEEE MTT-S International Microwave Symposium (IMS)*, pp. 1-3, 2016.
13. F. A. Ghaffar and A. Shamim, "A Self-biased 3D Tunable Helical Antenna in Ferrite LTCC Substrate", *IEEE International Symposium on Antennas and Propagation* (*APS/URSI)*, pp. 2291-2292, 2015.
14. H. M. Cheema, F. A. Ghaffar, M. Arsalan and A. Shamim, “A 94 GHz CMOS Based Oscillator Transmitter with an On-Chip Meandered Dipole Antenna", *IEEE International Symposium on Antennas and Propagation* (*APS/URSI*), pp. 1456-1457, 2015.
15. F. A. Ghaffar and A. Shamim, "Theory and Design of a Half-Mode SIW Ferrite LTCC Phase Shifter ", *IEEE MTT-S International Microwave Symposium (IMS)*, pp. 1-3, 2015.
16. F. A. Ghaffar, A. Shamim, J. Bray, "Design strategy for a tunable antenna on a partially magnetized ferrite LTCC substrate," *IEEE International Symposium of Antennas and Propagation Society (APS/URSI),* pp.779-780, 2014.
17. F. A. Ghaffar, H. M. Cheema, M. Arsalan, K. N. Salama and A. Shamim, “60 GHz System-on-Chip (SoC) with Built-in Memory and On-chip Antenna,” *IEEE European Conference on Antennas & Propagation (EuCAP),* 2014.
18. A. A. Hamdoun, F. A. Ghaffar and L. Roy, “Design of Flexible Patch Antenna Array”, *AES*, 2013.
19. F. A. Ghaffar, A. Shamim and L. Roy., "Study of LCP based flexible patch antenna array," *IEEE International Symposium of Antennas and Propagation Society (APS/URSI)*, pp.1-2, 2012.
20. F. A. Ghaffar and A. Shamim, "A 60 GHz Wideband and Miniaturized CMOS Fractal Antenna," *Progress in Electromagnetics Research PIERS*, 2012.
21. F. A. Ghaffar, A. Shamim and K. N. Salama, “Design and Comparison of LTCC Based Fractal Antennas” *URSI General Assembly and Scientific Symposium*, 2011.

22. F. A. Ghaffar, A. Shamim and K. N. Salama, “A miniaturized wide-band fractal LTCC antenna,” *IEEE Applied Computational Electromagnetic Society ACES*, 2011.
23. F. A. Ghaffar, M. U. Khalid, A. Shamim and K. N. Salama, “Gain-Enhanced LTCC System-on-Package for Automotive UMRR Applications,” *IEEE International Midwest Symposium on Circuits and Systems*, 2010.
24. F. A. Ghaffar, M. K. Mobeen, S. Qamar and M. Hasan, "A wide-band QPSK modulator using branch-line coupler and MESFET switches," *IEEE International Midwest Symposium on Circuits and Systems*, pp.1014-1017, 2009.

Abstracts in Refereed Conference Proceedings:

1. F. A. Ghaffar and A. Shamim, "A 60 GHz Wideband and Miniaturized CMOS Fractal Antenna," *Progress in Electromagnetics Research PIERS*, 2012.

- **Research Funding Received:**

External Research Grants and Contracts				
Year	Grantee (Indicate PI/Co-PI/Applicant)	Agency/Program	Title	Amount
2020-2025	PI	NSERC Discovery Grant	Reconfigurable Microwave Devices for Modern Wireless Applications	CAD 152,500
2018-2021	Investigator*	NSERC-SPG	Reconfigurable Wireless Devices using FPMS	CAD 476,500
2019-2020	Investigator*	General Motors	Radar Cross Section (RCS) Measurements and Algorithm Development	CAD 67,200

** in collaboration with Ontario Tech University*

Internal Grants				
Year	Grantee (Indicate PI/Co-PI/Applicant)	Source	Title	Amount
2019	PI	LU-Start Up Grant	Design of Reconfigurable/Programmable Microwave Components for Modern Wireless Applications	CAD 10,000
2021	PI	LU-SRC Grant	Reconfigurable Image Waveguide based Leaky Wave Antenna using uniaxial Field Programmable Microwave Substrate (FPMS)	CAD 5,000

- **Professional Associations:**

Year	Association
2019-Present	IEEE Member

- **Professional Committees/Service to the Profession:**

Year	Association
2021-Present	Guest Editor for MDPI's Electronics Journal
2020-Present	Review Editor for Frontiers in Electronics Journal
2011-Present	Reviewer for various IEEE journals and conferences

- **University Service / Administrative Responsibilities:**

Association
Senate Academic Appeals Committee

- **Departmental Service / Administrative Responsibilities:**

Year	Association
2020	Served on the hiring committee for 3 tenure-track Assistant Professor positions
2020	Served on the hiring committee of a limited term appointment (LTA) based Assistant Professor position
2020	Served on the hiring committee of a Lab Engineer for LUGC campus

- **Community Service / Responsibilities:**

Year	Association
N/A	

- **Courses Taught and Participation in Curriculum Development:**

    - **Undergraduate Courses:**

Year	Number	Course Name	Number of Students
2021	EELE-2134	Electronics II	10
2021	EELE-3311	Circuit Analysis and Design II	13
2020	EELE-3313	Material Science for Electrical Engineers	10
2020	EELE-4134	RF Circuits Design	7
2020	EELE-2134	Electronics II	10
2020	EELE-3311	Circuit Analysis and Design II	8
2019	EELE-3313	Material Science for Electrical Engineers	8

- **Graduate Courses:**

Year	Number	Course Name	Number of Students
2020	EELE-5631-AB	Antenna Theory and Design	39

- **SUPERVISION - Life Time Summary (Graduate and Undergraduate):**

LIFETIME SUMMARY		
Number of Students	Degree Type	Supervision Type (supervisor, co-supervisor, committee member)
2	PhD	Co-supervisor
2	Master's	Supervisor
1	Master's	Co-supervisor/committee member
1	Master's	Committee member
2	BE	Co-supervisor

- **Undergraduate Supervision - Contributions to Training of Highly Qualified Personal:**

Student	Degree/ Date	Supervision Type	Completed	Title
Joesph Ojo and Zuber Ahmed	BE/2017	Co-supervision	Yes	Personal Health Maintenance and Injury Prevention through Wearable Technology

- **Graduate Supervision - Contributions to Training of Highly Qualified Personal:**

Student	Degree/ Date	Supervision Type	Completed	Title
Ololade Sanusi	PhD/In-progress	Co-supervisor	No	Design of Flexible Microwave Passive Designs for Biomedical Applications
Hanyue Xu	PhD/In-progress	Co-supervisor	No	Theory and Design of Reconfigurable Filter Designs Based on Dielectric Material Properties
Noben Kumar Roy*	Master's/May 2021	Supervisor	Yes	Design of an FPMS based Leaky Wave Antenna for Beam-Steering Applications
Mohamed Nasser	Master's/January 2021	Co-supervisor	Yes	Design of Broadband Dual-Polarized mm-wave Antenna Array with high Isolation
Saqlain Razzaq*	Master's/In-progress	Supervisor	No	Design of a Pattern Reconfigurable Antenna Using Uniaxial Modulation of Substrate Characteristics

- **Supervisory Committee Membership:**

Student	Degree/ Date	Supervision Type	Title
Noben Kumar Roy*	Master's/May 2021	Supervisor	Design of an FPMS based Leaky Wave Antenna for Beam-Steering Applications
Mohamed Nasser	Master's/January 2021	Co-supervisor	Design of Broadband Dual-Polarized mm-wave Antenna Array with high Isolation
Mohammad Dawodi	Master's/May 2021	Committee Member	Filter Design using SIW technology

**Noben Kumar Roy and Saqlain Razzaq are from Lakehead University*

- **External Examiner Duties:**

Student	Degree/ Date	Supervision Type	Title
N/A			