SYED SHAHAN JEHANGIR

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Assistant Professor, Electrical and Computer Engineering
Oklahoma State University
Office Address: 204 Engineering South, Stillwater, Oklahoma, 74078
405-744-9919
syed.s.jehangir@okstate.edu | syedjehangir43@gmail.com

RESEARCH INTERESTS

Applied Electromagnetics, Phased Array Antennas/Arrays, Dual-polarized Antennas for radars and meteorology, Ultrawideband Probe Antennas for UAV-based Phased Array Radar Calibration and Communication Systems, Homogeneous and GRIN Dielectric-Lens Antennas, Artificial Materials, Material Characterization, Wearable antennas, MIMO Antennas for compact devices, Antennas for GPS/LTE/4G/5G wireless devices, Directional and High Gain Antennas, mm-Wave Antennas, Miniaturized Antennas, Metamaterials, RF & Microwave Filters, Biomedical Sensors.

EDUCATION

***The* University *of* Oklahoma, Norman, Oklahoma, USA** Aug. 2019 – Oct. 2023
Advanced Radar Research Center (ARRC)
Ph.D. Electrical and Computer Engineering **(CGPA: 4/4)**
Dissertation: *Ultra-wideband Antenna Solutions for Radars and Communication Systems*
Advisor: Prof. Jorge L. Salazar-Cerreno
Graduate Courses:

- Phased Array Antennas (Grade: A: Highest)
- RF & Microwaves Filter Design (Grade: A: Highest)
- Radar Engineering (Grade: A: Highest)
- RF & Microwave Circuits (Grade: A: Highest)

King Fahd University of Petroleum and Minerals, Dhahran, KSA
MS in Electrical Engineering **(CGPA: 3.714/4)** Jan. 2015 - Jun. 2017
Thesis: *Design of a Wideband Directive Yagi-based MIMO Antenna System with Loop Exciter.*
Advisor: Prof. Mohammad S. Sharawi.
Graduate Courses:

- Theory & Applications of Antenna Arrays (Grade: A+: Exceptional)
- Radiation & Propagation of Electromagnetic Waves (Grade: B: Very Good)
- RF & Microwave Transistor Design & Analysis (Grade: A: Excellent)
- Antenna Theory & Applications (Grade: A+: Exceptional)
- Digital Signal Processing (Grade: A: Excellent)
- Linear Control Systems (Grade: B+: Superior)
- Math Methods for Engineers (Grade: A+: Exceptional)

COMSATS University, Lahore Campus, Pakistan
BS in Electrical Engineering**, Gold Medalist (CGPA: 3.79/4)** Jan. 2010 - Feb. 2014

AWARDS AND HONORS

Year 2023

- Awarded **The Dissertation Excellence Award (DEA),** Gallogly College of Engineering, *The* University *of* Oklahoma (OU), Oct, 2023.
- Awarded **The Graduate Student Senate (GSS) Conference Travel Award,** *The* University *of* Oklahoma (OU), Oct, 2023.

- Awarded **The William H. Barkow Scholarship,** Gallogly College of Engineering, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2023.
- Received the **ECE P.H. Robinson Fellowship** for academic excellence, 2023

Year 2022

- Won the 2nd place and a cash prize for the poster "Designing Ultrawideband High Precision Dual-polarized Antenna Probes for Unmanned Aerial Vehicle (UAV) Based Real-time Calibration of Digital Phased Array Radars for Defense and Meteorology Applications", **Oklahoma Aerospace & Defense Innovation Institute (OADII) Student Poster Competition**, Oct., 2022.
- Awarded The **Farrar Endowment Scholarship**, College of Engineering, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2022.
- Awarded **The William H. Barkow Scholarship**, Gallogly College of Engineering, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2022.
- Awarded The **Nettie Vincent Boggs Graduate Scholarship**, Gallogly College of Engineering, *The* University *of* Oklahoma (OU), for excellent academic performance, 2022.
- Awarded ***The* University *of* Oklahoma Pandemic Scholarship**, 2022.

Year 2021

- Awarded The **Farrar Endowment Scholarship**, College of Engineering, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2021.
- Awarded The **William H. Barkow Scholarship**, Gallogly College of Engineering, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2021.
- Awarded The College of International Studies (CIS) Access **International Student Scholarship**, *The* University *of* Oklahoma, OU, 2021.
- Awarded the **James and Billie Wright International Student Scholarship**, *The* University *of* Oklahoma (OU), for outstanding academic achievements, 2021.
- Awarded ***The* University *of* Oklahoma Pandemic Scholarship**, 2021.

Years < 2020

- **Student Journal paper award**, both from the ECE Department and the ARRC OU, Dec 2020.
- Awarded **fully funded scholarship** for M.S. studies in KFUPM.
- Awarded **fully funded scholarship** for undergraduate studies in COMSATS (Ministry of Federal Employees and Benevolent Fund Scholarship).
- Awarded the **Campus Gold Medal** by the rector of COMSATS, Pakistan, March, 2014.
- **Highest CGPA holder** in the batch (class rank: 1 out of 103). Awarded Distinction and Merit scholarships each semester, 2010-2014.
- **BS senior project** was selected for the yearly competition of the International Conference on Frontier Institute of Technology (FIT), Pakistan, Dec. 2013.
- Awarded for securing **1st place in HSSC studies** in district Nowshera, Khyber-Pakhtunkhwa (KPK) state, 2007.

WORK EXPERIENCE

Garmin International, KS, USA Oct. 2023- Aug. 2024
Antenna Engineer, Core Platform Technology Team
Manager: Abu Sayem
Description: Responsible for the design, testing, and prototyping of the GPS, Bluetooth and Wi-Fi antennas for various Garmin products

***The* University *of* Oklahoma, Norman, Oklahoma, USA**
Advanced Radar Research Center (ARRC)
Phased Array Antenna Research & Development Group (PAARD)
Graduate Research Assistant (GRA) Aug. 2019 – Oct. 2023
Advisor: Dr. Jorge L. Salazar-Cerreno

Research Projects:

- Ultrawideband Probe Antenna (1-32 GHz bandwidth) for UAV-based Radar Calibration
- Wideband Beamwidth Reduction and Beamwidth Constant Probe Antenna
- Dual-polarized UWB Antenna
- Artificial Dielectric 3D-printed Spherical, Hyperbolic, and Planar GRIN Lens Antennas
- Metallic Lens Antenna
- Horn Feed Antenna
- Material Characterization at Microwave and mm-Wave Frequencies
- Tunable Artificial Dielectrics based on Maxwell Garnett Particle Mixing Theory
- Cavity-backed UWB Microstrip Patch Antenna with a fractional bandwidth of 26%
- Dual-polarized Slotted Waveguide Antenna Array
- Metamaterial Inspired Electrically Small Antenna
- MATLAB Gui for Horus Radar

United Arab Emirates University, Al Ain, UAE

Research Associate Sep. 2017 - July 2019

Advisor: Dr. Mousa Hussein.

Research Project-1: Sep. 2018 - July 2019

Artificial Thin Nanostructured Surfaces for Microwave and Optical Applications.

Sponsored by Dassault Aviation, France.

- Worked on the analysis of the dielectric properties of Carbon Nanotube composites using DAK setup.
- Previously, worked on the percolation threshold measurement of the Carbon Nanotube samples using LCR meter.

Research Project-2: Sep. 2017 - Sep. 2018

Nanocomposites for UAV Application: Evaluation of The Electrical, Mechanical and Thermal Properties of The Carbon Nanotubes Impregnation in Composites

Sponsored by Abu Dhabi Autonomous Systems Investments Co., LLC.

- Worked on measuring the Radar Cross Section (RCS) of various Carbon Nanotube samples with different concentrations of ionic liquids wrapped around an aircraft model on a mechanically controlled rotational setup using Anritsu Vector Network Analyzer (VNA) with transmitting and receiving horn antennas for the X-band radar applications.
- Worked on the frequency domain analysis of the measured RCS data using FFT algorithm.
- Designed an X-band metamaterial antenna using Floquet ports in HFSS for an aircraft model with improved absorption characteristics.
- Designed a plasmonic nano-antenna array for solar energy harvesting using CST.

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, KSA

Antennas and Microwave Structures Design Laboratory (AMSDL)

Graduate Research Assistant (GRA) Jan. 2015 - Jun. 2017

Advisor: Prof. Mohammad S. Sharawi.

Research Projects/Activities:

- MIMO Antennas for GPS/LTE/4G/5G Wireless Devices
- Reconfigurable MIMO Antennas
- Miniaturized Antennas for GPS/LTE/4G/5G Wireless Devices
- High Gain and Directional Antennas for 4G/5G/mm-Wave Wireless Communication
- Modeling, prototyping or fabrication, and testing of antennas
- Created and presented tutorials on designing of antennas in HFSS, fabrication of antennas using LPKF machine, and using soldering workstation.

National University of Science and Technology, Islamabad, Pakistan

R&D Lab, School of Electrical Engineering and Computer Science (SEECS)

Research Assistant Jan. 2014 - June. 2014

- Worked on the project based on IoT platform consisting of communications modules and cloud platform in C++.

TEACHING ASSISTANT EXPERIENCE

***The* University *of* Oklahoma, Norman, Oklahoma, USA**

- **Graduate Teaching Assistant (GTA)- Spring 2022.** Jan. 2022 – May. 2022
  Course: ECE 3723 - Electric Circuits II
  Responsibilities: Grading and helping students in understanding the topics.
- **Graduate Teaching Assistant (GTA)- Fall 2021.** Aug. 2021 – Dec. 2021
  Course: ECE3813- Introductory Electronics
  Responsibilities: Creating and grading homework, designing its solution manuals, and helping students in understanding the topics.
- **Graduate Teaching Assistant (GTA)- Spring 2020.** Jan. 2020 – May. 2020
  Course: ECE 3613- Electromagnetic Fields I
  Responsibilities: Creating and grading homework, designing its solution manuals, and helping students in their projects.
- **Graduate Teaching Assistant (GTA)- Fall 2019.** Aug. 2019 – Dec. 2019
  Course: ECE 3723 - Electric Circuits II
  Responsibilities: Grading and helping students in understanding the topics.

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, KSA

- **Graduate Teaching Assistant (GTA)- Spring 2016.** Jan. 2016 – May. 2016
  Course: EE 562 – Digital Signal Processing I
  Responsibilities: Grading and helping students in understanding the topics.

INDUSTRY INTERN EXPERIENCE

ZTE Corporation, Lahore, Pakistan
Trainee Engineer Jun. 2013 - Aug. 2013

- Planning new BTS sites.
- Identification of different faults faced during the maintenance of new BTS sites such as: wapda outage, power drop, under voltage, DC low voltage, and AC main failure, etc.
- Implementation of various techniques: handover of cells and reselection (ingoing and outgoing both), frequency hopping (adding frequency "hops" for the frame and adding TRX's when needed), removing critical alarms and sending reports (aging, counts, and Trouble Tickets) to site engineers.

National Transmission and Dispatch Company (NTDC), WAPDA, Lahore, Pakistan
Trainee Engineer May 2013 - Jun. 2013

- Understanding basic algorithms of Power Line Communication (PLC) and Optical Fiber Communication.
- Study and analysis of various applications and advantages of different microwave devices such as: rectangular waveguides, circular waveguides, dielectric slabs, power dividers, and couplers, etc.

GRANTS PROPOSAL (Pending/Approved)

1. ***Co P. I.*** on the grant related to the design of a Dual-Linear Polarized Quad-Ridged Horn Antenna (QRHA) working from 1-18GHz, *submitted to Custom Microwave Inc. (CMI), Longmont, CO, USA, having a value of $70,000*, 2023.

2. ***Co P. I.*** on the grant related to the design, fabrication, and measurement of the L-Band Dual-Polarized Backed-Cavity Proximity-Coupled Microstrip Patch Antenna (BC-PCMPA). Due to its unique feeding mechanism and cavity-backed structure, this special antenna has achieved a wide bandwidth of more than 26%. *This work was submitted as a grant to Agile RF Systems LLC, Berthoud, CO, USA, with a funding of $100,000*, 2022.

PATENTS (GRANTED)

5. M. S. Sharawi and **Syed. S. Jehangir**, Multi-beam Yagi-based MIMO antenna system, *US10892562*, Jan, 2021.
4. M. S. Sharawi and **Syed. S. Jehangir**, A Miniaturized Directional UWB Bi-Planar Yagi MIMO Antenna System, *US10847885B2*, Nov, 2020.
3. M. S. Sharawi and **Syed. S. Jehangir**, Compact size , Low profile , Dual wideband , Quasi-Yagi MIMO Antenna System, *US10256549B2*, April, 2019.

PATENTS (PENDING)

1. **Syed. S. Jehangir** and J. L. Salazar-Cerreno, A UWB Dual-polarized Constant beamwidth Ridged Horn Probe Antenna for UAV-based Radars and Communication Systems, Under preparation, Nov., 2023.

JOURNAL PUBLICATIONS (PUBLISHED)

11. **S. S. Jehangir**, Z. Qamar, N. Aboserwal, and J. L. Salazar-Cereno, "Application of the Mixing Theory in the Design of a High-Performance Dielectric Substrate for Microwave and Mm-Wave Systems," *IEEE Access*, vol. 8, pp. 180855-180868, 2020, Sep, 2020.
10. Mousa I. Hussein, **Syed S. Jehangir**, I. J. Rajmohan, Y. Haik, Q. Clément, and N. Vukadinovic "Microwave Absorbing Properties of Metal Functionalized-CNT-Polymer Composite for Stealth Applications", *Scientific Reports*, vol. 10, no. 16013, Sep, 2020.
9. **Syed. S.** Jehangir, R. Hussain, Mousa I. Hussein, and M. S. Sharawi, "Frequency Reconfigurable Yagi-Like MIMO Antenna System with a Wideband Reflector," *IET Microwaves, Antennas & Propagation*, vol. 14, no. 7, pp. 586-592, June, 2020.
8. **S. S. Jehangir**, and M. S. Sharawi, "A Compact Single Layer Four-Port Orthogonally Polarized Yagi-Like MIMO Antenna System," *IEEE Transactions on Antennas & Propagation*, vol. 68, no. 8, pp. 6372-6377, Aug., 2020.
7. R. Hussain, **Syed. S. Jehangir**, Muhammad U. Khan, and M. S. Sharawi, "Stacked Frequency Reconfigurable Yagi-Like MIMO Antenna System," *IET Microwaves, Antennas & Propagation*, vol. 14, no. 6, pp. 532-538, May, 2020.
6. **S. S. Jehangir** and M. S. Sharawi, "A Wideband Sectoral Quasi-Yagi MIMO Antenna System with Multi-Beam Elements," *IEEE Transactions on Antennas & Propagation*, vol. 67, no. 3, pp. 1898-1903, March, 2019.
5. **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized Multi-Wideband Quasi-Yagi MIMO Antenna System," *International Journal of RF and Microwave Computer-Aided Engineering*, vol. 28, no. 5, June, 2018.
4. **S. S. Jehangir** and M. S. Sharawi, and A. Shamim, "Highly Miniaturized Semi-Loop Meandered Dual-band MIMO Antenna System," *IET Microwaves, Antennas & Propagation*, vol.12, no. 6, pp. 864-871, May, 2018.
3. **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized UWB Bi-Planar Yagi-Like MIMO Antenna System," *Antennas and Wireless Propagation Letters*, vol. 16, pp. 2320-2323, June, 2017.

2. **S. S. Jehangir** and M. S. Sharawi, "A Single Layer Semi-Ring Slot Yagi-Like MIMO Antenna System with High Front-to-Back Ratio," *IEEE Transactions on Antennas & Propagation*, vol. 65, no. 2, pp. 937-942, Dec., 2016.
1. **S. S. Jehangir** and M. S. Sharawi, "A novel dual wideband circular quasi-yagi MIMO antenna system with loop excitation," *Microwave and Optical Technology Letters*, vol. 58, no. 11, pp. 2769-2774, Nov., 2016.

JOURNAL PUBLICATIONS (SUBMITTED/UNDER PREPARATION)

1. **S. S. Jehangir**, Sergio Masamura, and J. L. Salazar-Cereno, "An Ultrawideband Lens-integrated UAV-based Calibration Platform for Radars and Communication Systems,", submitted, *IEEE Transactions on Antennas and Propagation,* Nov., 2023.
2. **S. S. Jehangir** and J. L. Salazar-Cereno, "A Dual-polarized Ultrawideband Quad-Ridged Horn Antenna for UAV-based Radars and Communication Systems,", under preparation, *IEEE Transactions on Antennas and Propagation,* Nov., 2023.
3. J. L. Salazar-Cereno, **S. S. Jehangir** and Marcelo Moreno, "Cavity-backed Proximity-coupled Dual-polarized Microstrip Patch Array,", under preparation, *IEEE Transactions on Antennas and Propagation,* Nov., 2023.
4. **S. S. Jehangir** and J. L. Salazar-Cereno, "Design Principles, Traits, and Limitations of an Ultrawideband Dual-polarized Quad-Ridged Horn Antenna,", under preparation, *IEEE Transactions on Antennas and Propagation,* Dec. 2023.
5. **S. S. Jehangir** and J. L. Salazar-Cereno, "Design of a 3D-printed Hyperbolic Lens Antenna for Beamwidth Reduction in Quad-Ridged Horn Antenna for UAV-based In-situ Characterization of Radars,", under preparation, *IEEE Transactions on Antennas and Propagation,* Oct. 2023.

CONFERENCE PUBLICATIONS

21. **Syed. S. Jehangir** and J. L. Salazar-Cereno, "Breaking the Limits: A Novel Dual-Polarized Ultrawideband Probe Antenna for High-Performance Radar and Communication Systems," *45th Annual Meeting and Symposium of the Antenna Measurement Techniques Association (AMTA)*, Seattle, USA, Oct., 2023.
20. **Syed. S. Jehangir** and J. L. Salazar-Cereno, "A Hyperbolic Lens-Integrated UWB Dual-Polarized Quad-Ridged Horn Antenna for UAV-Based In-situ Calibration of Digital Phased Array Radars," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, Oregon, USA, July, 2023.
19. **Syed. S. Jehangir** and J. L. Salazar-Cereno, "The Need for Narrow Beamwidth in Ridged Horn Antennas for UAV-Based In-situ Measurements of Radars and Communication Systems," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, Colorado, USA, July, 2022.
18. **Presented**: **Syed. S. Jehangir** and J. L. Salazar-Cereno, "Achieving Near-Constant Beamwidth and Symmetry in Patterns of the Pyramidal Ridged Horn Antenna for UAV-Based In-situ Characterization and Measurement of Phased Array Radars," *IEEE Texas Symposium on Wireless & Microwave Circuits and Systems,* Waco, Tx, April, 2022.
17. **[Won the 1st place in Industrial Engineering Paper Award]** J. L. Salazar-Cereno, **S. S. Jehangir**, Antony Segales, Z. Qamar, and N. Aboserwal, "A UAV-Based Polarimetric Antenna Measurements for Radar and Communication Systems from 3 GHz to 32 GHz,", *IEEE Conference on Antenna Measurements & Applications (CAMA)*, France, pp. 55-60, Oct, 2021.
16. J. L. Salazar-Cereno, **S. S. Jehangir**, Antony Segales, Z. Qamar, and N. Aboserwal, "An Ultrawideband UAV-Based Metrology Platform for In-situ EM Testing of Antennas, Radars, and Communication Systems," *IEEE Radar Conference*, New York, USA, pp. 1-5, March, 2022.
15. **Syed. S. Jehangir**, R. Hussain, and M. S. Sharawi, "A Novel Frequency Reconfigurable Yagi-Like MIMO Antenna System," *12th European Conference on Antennas and Propagation (EUCAP)*, Denmark, March, 2020.

14. R. Hussain, **Syed. S. Jehangir**, Muhammad U. Khan, and M. S. Sharawi, "A Wide-band Slot-based Frequency Agile Yagi-Uda-Like MIMO Antenna System," *12th European Conference on Antennas and Propagation (EUCAP)*, Denmark, submitted, 2019.
13. **Presented**: **Syed S. Jehangir**, Mousa I. Hussein, I. J. Rajmohan, Y. Haik, Q. Clément, and N. Vukadinovic, "Polyurethane-Based Functionalized CNT Composites as Absorbers for Microwave Applications," *IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes for RF and THz Applications (IMWS-AMP)*, pp. 91-93, 2019.
12. **S. S. Jehangir** and M. S. Sharawi, "A Compact Single Layer Orthogonal Polarized Yagi-Like Directional Antenna," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, Boston, MA, USA, pp. 1607-1608, 2018.
11. **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized Dual UWB Quasi-Yagi MIMO Antenna System using a Defected Ground Structure", *IEEE International Symposium on Antennas and Propagation (APSURSI)*, Boston, MA , USA, pp. 399-400, 2018.
10. **Presented**: Tri B. Susilo, **Syed. S. Jehangir**, M. I. Hussein, A. Wahyudie, "A Plasmonic Nanoantenna Array for Solar Energy Applications," *5th International Conference on Renewable Energy: Generation and Applications (ICREGA)*, Al Ain, UAE, pp. 181-182, 2018.
9. A. Wahyudie, Tri B. Susilo, and **Syed. S. Jehangir**, " Design of A 100 W Mini Permanent Magnet Linear Generator for Wave Energy Converter System," *5th International Conference on Renewable Energy: Generation and Applications (ICREGA)*, Al Ain, UAE, pp. 223-226, 2018.
8. **S. S. Jehangir**, R. Hussain, M. I. Hussein, and M. S. Sharawi, "A Wideband Multi-Beam Yagi based MIMO Antenna System with Multiple Parasitic Directors," *12th European Conference on Antennas and Propagation (EUCAP)*, London, UK, pp. 1-4, 2018.
7. **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized Multi-Wideband Quasi-Yagi Antenna with Rectangular Loop Excitation," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, San Diego, CA, USA, pp. 2527-2528, 2017.
6. **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized UWB Bi-Planar Yagi-Like Antenna," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, San Diego, CA, USA, 501-502, 2017.
5. **S. S. Jehangir** and M. S. Sharawi, "A highly miniaturized loop excited Quasi-Yagi antenna with high front-to-back ratio", *11th European Conference on Antennas and Propagation (EUCAP)*, Paris, France, 2017, pp. 1976-1979.
4. **S. S. Jehangir** and M. S. Sharawi, "A comparison between two different excitations for Quasi-Yagi antennas," *IEEE Middle East Conference on Antennas and Propagation (MECAP)*, Beirut, Lebanon, pp. 1-2, 2016.
3. **Presented**: **S. S. Jehangir** and M. S. Sharawi, "A Miniaturized Dual Wideband Loop Excited Quasi Yagi Antenna using a Defected Ground Structure," *16th Mediterranean Microwave Symposium (MMS)*, Abu Dhabi, UAE, pp. 1-3, 2016.
2. **S. S. Jehangir** and M. S. Sharawi, " A novel compact single layer semi-ring slot Yagi-like antenna with high front-to-back ratio," *IEEE 5th Asia-Pacific Conference on Antennas and Propagation (APCAP)*, Kaohsiung, Taiwan, pp. 131-132, 2016.
1. **S. S. Jehangir**, A. Hassan, and M. S. Sharawi, "A 4-element dual wideband circular Yagi MIMO antenna system with loop excitation," *IEEE International Symposium on Antennas and Propagation (APSURSI)*, Fajardo, pp. 69-70, 2016.

PROFESSIONAL CERTIFICATIONS

- Computer-Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Numerical Control (CNC), and Milling – Lathe (School of Mechanical and Manufacturing Engineering), NUST, Islamabad, Pakistan, 2014.

SKILLS

Antennas/Electromagnetics:

- Hands-on experience with the development of various kinds of antennas or antenna arrays for radars and other applications from CAD modeling to prototyping and testing.
- Hands-on experience with anechoic chambers for antenna testing including near-field and far-field measurement techniques.
- **RF CAD Tools:** HFSS, CST, XFdtd, FEKO, ADS, Microwave Office/AWR, Cadense, CADSTAR, Optenni Lab, DAK, SolidWorks.
- **Fabrication:** 3D printing, CNC Milling, PCB LPKF Milling and Laser Prototyping, Electro-less/Electro-plating, Photolithography.

Programming Languages: Matlab, Matlab AppDesigner, C, C++, Java, LabVIEW.
Applications: Latex, Visio, Inkscape.

PROFESSIONAL SERVICE

Referee service

- IET Microwaves, Antennas & Propagation.
- IEEE Antennas and Wireless Propagation Letters.
- International Journal of Microwave and Wireless Technologies.
- IEEE Open Journal of Microwave and Wireless Technologies.

REFERENCES

- Dr. Jorge L. Salazar-Cerreno
  William H. Barkow Presidential Associate Professor
  Advanced Radar Research Center (ARRC)
  The University *of* Oklahoma, Norman, USA
  Email: salazar@ou.edu
  Phone: (405) 922-7848
  Web: www.ou-arrc-paard.com

- Prof. Robert D. Palmer, Ph.D., FAMS, FIEEE
  Executive Director, Advanced Radar Research Center (ARRC)
  Associate Vice President for Research & Partnerships
  Professor & Tommy C. Craighead Chair, School of Meteorology
  The University *of* Oklahoma, Norman
  Email: rpalmer@ou.edu
  Phone: (405) 325-6319

- Prof. Tian-You Yu
  Tuma Presidential Professor, School of Electrical and Computer Engineering
  Director of Operations, Advanced Radar Research Center (ARRC)
  Adjunct Professor, School of Meteorology
  The University of Oklahoma, Norman,
  Email: tyu@ou.edu
  Phone: (405) 325-3344

- Prof. Mohammad S. Sharawi
  Department of Electrical Engineering, Polytechnique Montréal, Canada.
  Email: m.sharawi@ieee.org
  Phone: (514) 340-4711 Ext. 7127