Syed Shahan Jehangir

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RESEARCH INTERESTS

Electromagnetics, MIMO Antennas, Miniaturized Antenna Arrays for 4G/5G.

EDUCATION

MS in Electrical Engineering (Major: Electromagnetics - Antennas) **CGPA: 3.714/4** **2015 - 2017**

- King Fahd University of Petroleum and Minerals (KFUPM), KSA
- Dissertation: *Design of a Wideband Directive Yagi Based MIMO Antenna System with Loop Exciter.*
- Advisor: **Prof. Mohammad S. Sharawi**.

BS in Electrical Engineering (Major: Telecommunications) **CGPA: 3.790/4** **2010 - 2014**

- COMSATS Institute of Information Technology, Lahore, Pakistan

LIST OF PUBLICATIONS

PATENTS

P4. M. S. Sharawi and **Syed. S. Jehangir**, A Wideband Sectoral Quasi-Yagi MIMO Antenna System with Multi-Beam Elements, To be *Submitted to USPO*, July, 2018.

P3. M. S. Sharawi and **Syed. S. Jehangir**, A Miniaturized Directional UWB Bi-Planar Yagi MIMO Antenna System, *Submitted to USPO*, May, 2017.

P2. M. S. Sharawi and **Syed. S. Jehangir**, A Highly Miniaturized Semi-Loop Meandered Dual Wideband Quasi-Yagi MIMO Antenna System, *Submitted to USPO*, Dec, 2016.

P1. M. S. Sharawi and **Syed. S. Jehangir**, A Compact Yagi-Like MIMO Antenna System, *Submitted to USPO*, June 16, 2016.

JOURNAL PAPERS

J8. **S. S. Jehangir**, and M. S. Sharawi, A Wideband Sectoral Quasi-Yagi MIMO Antenna System with Multi-Beam Elements," *IEEE Transactions on Antennas and Propagation*, ***Revisions in process***, March, 2018.

J7. **S. S. Jehangir**, and M. S. Sharawi, A Compact Single Layer Four-Port Orthogonally Polarized Yagi-Like MIMO Antenna System," *Antennas and Wireless Propagation Letters* ,***Revisions in process*** , May, 2018.

J6. **S. S. Jehangir**, R. Hussain, and M. S. Sharawi, A Frequency Reconfigurable Single Layer Yagi-Like MIMO Antenna System," *Antennas and Wireless Propagation Letters*, Under Preparation, July, 2018.

J5. **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, e21167, June, 2018.

J4. **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, 03 May, 2018.

J3. **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, 2017.

J2. **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 and Propagation*, vol. 65, no. 2, pp. 937-942, Feb. 2017.

J1. **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, 2016.

CONFERENCE PAPER PRESENTED

C1. **S. S. Jehangir** and M. S. Sharawi, “A miniaturized dual wide-band loop excited quasi-yagi antenna using a defected ground structure,” *16th Mediterranean Microwave Symposium (MMS), Abu Dhabi, United Arab Emirates*, pp. 1-3, 2016,

CONFERENCE PAPERS

C11. **S. S. Jehangir** and M. S. Sharawi, “A Compact Single Layer Orthogonal Polarized Yagi-Like Directional Antenna,” Accepted , *IEEE International Symposium on Antennas and Propagation (APSURSI),* Boston, Massachusetts , Accepted, USA, 2018.

C10. **S. S. Jehangir** and M. S. Sharawi, “A Miniaturized Dual-Wideband Quasi-Yagi MIMO Antenna System using DGS”, Accepted, *IEEE International Symposium on Antennas and Propagation (APSURSI),* Boston, Massachusetts , USA, 2018.

C9. 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, United Arab Emirates, pp. 181-182, 2018.

C8. 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, United Arab Emirates, pp. 223-226, 2018.

C7. **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,” Accepted, *12th European Conference on Antennas and Propagation (EUCAP),* London, UK, 2018.

C6. **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.

C5. **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.

C4. **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.

C3. **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.

C2. **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,* pp. 131-132, 2016.

C1. **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.

RESEARCH EXPERIENCE

RESEARCH ASSOCIATE **Sep 2017 - present**

Department of Electrical Engineering, United Arab Emirates University (UAEU), Al Ain, UAE.

- Currently working on the design and fabrication of a novel metamaterial structure to be used on the aircraft model with improved absorption characteristics in the X-band.
- Worked on measuring the Radar Cross Section (RCS) of various carbon nanotube materials with different concentrations of ionic liquids wraped around an aircraft model on a mechanically controlled rotational setup using Anritsu Vector Network Analyser (VNA) with transmitting and receiving horn antennas for the radar band applications.
- Worked on the frequency domain analysis of the measured RCS data using FFT algorithm.
- Designed a plasmonic nano-antenna array for solar energy harvesting using CST microwave studio.
- Designed a metamaterial antenna for the X-band applications with floquet and wave ports.

RESEARCH ASSISTANT **Jan 2015- Feb 2017**

Antennas and Microwave Structures Design Laboratory (AMSDL), Department of Electrical Engineering, King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia

- As a member of AMSDL during MS studies at KFUPM, I have got hands-on experience of operating and testing various RF equipments such as fabricating antennas using LPKF S-103 milling machine, soldering of electronic components on PCB's, testing RF circuits and antennas for their performance using vector network analyser (VNA).
- Delivered several tutorials to the members of the research group on: fabrication of antennas using LPKF machine, using soldering workstation and designing antennas using CST and HFSS.

RESEARCH ASSISTANT **Jan 2014 - Sep 2014**

XAD Communications: Research and Development Project Lab at School of Electrical Engineering and Computer Science, SEECS (NUST), Islamabad, Pakistan

- Worked on a research project **XCorrosion Network** aimed for acquiring data (thickness of pipelines, temperature of the fluid/oil inside pipelines) using sensors boards and microcontrollers. The communication between nodes was modeled using IEEE wireless protocol (Peer 2 Peer, MiWi Protocol).
- The work involved designing and improving Digital Signal Processing Algorithms and Real Time Algorithm development along with assembly level implementation.

RESEARCH ASSISTANT **Feb 2013 - Oct 2013**

Multi-Rate Communication Network Research Group (MRCN), Department of Electrical Engineering, COMSATS, Lahore, Pakistan

- Worked on the hardware implementation of transceivers, based on Multi-rate signal processing techniques and Multi-Carrier Modulation (MCM).

REFEREE SERVICE

- Journal of IET-MAP.
- AWPL.

PROFESSIONAL EXPERIENCE

Xongxing CMPAK, ZTE Corporation, Lahore, Pakistan **Jun 2013 - Aug 2013**

- Planning new BTS sites.
- Debugging of different faults faced during the maintenance of new BTS sites like wapda outage, power drop, under voltage, DC low voltage, and AC main failure, etc.
- Implementation of techniques of 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), **May 2013 - Jun 2013**

WAPDA, Lahore, Pakistan

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

Mobilink, Lahore, Pakistan **Jun 2012 - Aug 2012**

- Managing traffic in cells, preventing blocking via different ways like transceiver expansion, half-rate channels, handovers, and frequency hopping, etc.

British American Tobacco Company (BAT), Nowshera, Pakistan **Jun 2011 - Sept 2011**

- Understanding the generation, transmission and conversion of electrical energy used in Tobacco plant.
- Observation/analysis of entire plant and machinery from Seed to Smoke and understanding Programmable Logic Controller (PLC) installation in tobacco plant.

SELECTED ACADEMIC PROJECTS (MS)

- Design of a RF Transceiver system using ADS software.
- Design of a Broad-Band Planar Quasi-Yagi Antenna Array using CST software.
- Image Compression using Principal Components Analysis (PCA) technique using Matlab.
- Design of 5×5 elements Slot Antenna Array for Beam Scanning using CST software.
- **Wrote technical journal reports on two projects**: Optical Nano-antennas and Microstrip Quasi-Yagi Array with Annular Sector Directors in the course “Radiation and Propagation of Electromagnetic Waves.

AWARDS & HONORS

- Awarded with **Full-Time MS scholarship by KFUPM** for two years of full tuition cover and living support.
- Awarded with **Full Funded BS Merit scholarship** by **COMSATS** (from the Ministry of Federal Employees and Benevolent Fund Scholarship) for four years including full tuition fee and living support.
- Awarded with the **Campus Gold Medal** by the rector of COMSATS, Islamabad, Pakistan.
- **Highest CGPA holder** in the batch **(class rank: 1 / 103)**. Awarded with **Distinction** and **Merit scholarships** each semester.
- **BS Final Year Project** was selected among 40 different projects of EE Department of COMSATS, for the yearly **competition** of International Conference on Frontier Institute of Technology (FIT), Islamabad, Pakistan.
- **Full funded scholarship holder** for 2 years of HSSC studies including tuition cover.
- **First position holder in the District in HSSC studies**, Awarded with the **Gold Medal** by the Ministry of Education, Khyber Puktoon Khwa province, Nowshera, Pakistan.

ENGINEERING SOFTWARE EXPERTIES

- **C, C++, Java, Matlab, PSpice, LabVIEW, Latex**
- **HFSS, CST, FEKO, ADS**

COURSES OF MOST INTEREST

- Antenna Theory and Antenna Arrays
- Electromagnetic Theory
- Radiation and Propagation of Electromagnetic Waves
- Microwave Engineering
- Wireless Communication
- Signal Processing

CERTIFICATIONS

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

LANGUAGES

- Pashtu (as native language)
- English (as second and official language)

REFERENCES

- **Mohammad S. Sharawi, Professor, Electrical Engineering Department, KFUPM.**
  Email: msharawi@kfupm.edu.sa
- **Husain M. Masoudi, Professor, Electrical Engineering Department, KFUPM.**
  Email: husainm@kfupm.edu.sa
- **Dr. Muhammad Adnan Siddiqui, ETH Zurich, Switzerland.**
  Email: siddique@ifu.baug.ethz.ch