

Madiha Khalid

House no 41, Street no 25, G-10/2, Islamabad, Pakistan

+92-323-5519362 | madiha.khalid@seecs.edu.pk | March 11th, 1988

Personal Profile

An academician at National University of Science and Technology, undertaking information security and computing courses. Zealous about engineering and with 10+ years of experience specializing in FPGA design, C programming, quantum computing and network security.

Education

Bahria University

PhD in Electrical Engineering

- CGPA 4.00
- Specialised in Information Security

Islamabad, Pakistan

Sept 2016 - April 2023

UET Taxila

MSc in Electrical Engineering

- CGPA 3.98
- Specialised in Control Systems

Taxila, Pakistan

Jan 2011 - July 2012

UET Lahore

BSc in Electrical Engineering

- CGPA 3.89
- Passed with seven Dean's Honour
- Specialised in Electronics

Lahore, Pakistan

Sept 2006 - Sept 2010

Work Experience

School of Electrical Engineering and Computer Science, NUST

Assistant Professor

- **Courses Taught:** Software Engineering, Advanced Cryptography, Information Security
- **Technical Skills:** Verilog programming, IBM Qiskit
- **Soft Skills:** Managerial skills, Time Management, Communication, Presentation skills.

Islamabad, Pakistan

Sep 2023 - Current

Bahria University

Assistant Professor

- **Courses Taught:** Linear Circuit Analysis, Electromagnetic Field theory, Industrial Automation, Probability Basics, Advance Network Security, Digital Signal Processing, Advanced IoT Security
- **Technical Skills:** C programming, Verilog programming, IBM Qiskit
- **Soft Skills:** Teamwork, Time Management, Communication, Presentation skills.

Islamabad, Pakistan

July 2019 - Current

Bahria University

Lecturer

- **Courses Taught:** Numerical Analysis, Signals and Systems, Electrical Network Analysis
- **Technical Skills:** Matlab, C programming
- **Soft Skills:** Leadership, Time Management, Communication, Logical Thinking.

Islamabad, Pakistan

Jan 2015 - July 2019

Publications

- M. Najm-ul-Islam, Madiha Khalid, Umar Mujahid, "Formal Security Analysis of Generalized Ultralightweight Mutual Authentication Protocol", Future Technologies Conference (FTC), 2023.
- Umar Mujahid, Madiha Khalid and Najam ul Islam Muhammad, "FPGA Based Emulation Of B92 QKD Protocol", Annual Conference on Information Sciences and Systems (CISS), 2023.
- Madiha Khalid, Umar Mujahid, Atif Jafri, Hongsik Choi and Najam ul Islam Muhammad, "An FPGA-based hardware abstraction of quantum computing systems", Journal of Computational Electronics (IF 1.983), 2021.
- Madiha Khalid, Umar Mujahid, M. Najm-ul-Islam, Hongsik Choi, Imtiaz Alam & Shahzad Sarwar, "Ultralightweight resilient mutual authentication protocol for IoT based edge networks", Journal of Ambient Intelligence and Humanized Computing (IF 4.594), 2021.
- Osman Khan, Madiha Khalid, Umar Mujahid & M. Najam-ul-Islam, "Cryptanalysis of Resource Constraint IoT Network Authentication Protocol, RAPP", IBCAST 2021.
- Madiha Khalid, Umar Mujahid & M. Najam-ul-Islam, "Cryptanalysis of ultralightweight MAC RFID protocol", ICOSST, December 2019, UET Lahore.

- Madiha Khalid, Umar Mujahid & M. Najam- ul-Islam,” Ultralightweight RFID Authentication Protocols for Low-Cost Passive RFID Tags”, Security and communication Networks (IF 1.376),2019.
- M. Najam-ul-Islam, Madiha Khalid, Umar Mujahid & Hyesung Park, “Recursive Cryptanalysis of the IoT Authentication Protocol”, IEEE Global Power, Energy and Communication Conference 2019.
- Madiha Khalid, Umar Mujahid, Aniq Tahir & Hyesung Park, “Cryptanalysis of Radio Frequency Identification System Mutual Authentication Protocol”, CCODE, 2019.
- Madiha Khalid, Umar Mujahid, M. Najam- ul-Islam & Binh Tran, “Probabilistic Full Disclosure Attack on IoT Network Authentication Protocol”, Future of Information and Communication Conference (FICC), 2019.
- Madiha Khalid, Umar Mujahid & M. Najam- ul-Islam,” Cryptanalysis of ultralightweight mutual authentication protocol for radio frequency identification enabled Internet of Things networks”, International Journal of Distributed Sensor Networks (IF 1.65),2018.
- Madiha Khalid, Umar Mujahid & M. Najam- ul-Islam, “Advanced Strong Authentication Strong Integrity (ASASI) Protocol for Low Cost Radio Frequency Identification Tags”, International Conference on Smart Computing and Electronic Enterprise,2018.
- Madiha Khalid & Umar Mujahid, “Security Framework of Ultralightweight Mutual Authentication Protocols for Low Cost RFID tags” CCODE 2017, Bahria University, Islamabad Pakistan.
- Umar Mujahid, M. Najam-ul-Islam & Madiha Khalid,” Efficient Hardware implementation of KMAP+: An ultralightweight Mutual Authentication Protocol”, Journal of Circuits, System and Computers (IF 0.47),2017.
- Madiha Khalid & Asif Mehmood, “Bond graph modeling and PID controller stabilization of Single link biomechanical Model” submitted in ICOMs 2013, Air University, Islamabad Pakistan.

Projects

- Thalassemia detection using CBC report through Machine Learning
- Machine Learning based carrier detection of Thalassemia using blood images
- Quantum Cryptanalysis of Lightweight Ciphers
- FPGA Based Emulation of Quantum Entanglement
- Qubit Weaver: online quantum simulator
- Framework for enhancing the key agreement rate of QKD
- Cryptanalysis of RFID based Authentication Protocols

Achievements

2024	Invited Speaker , Accessing Quantum Computers: A myth or a reality	LUMS, Lahore, Pakistan
2019	Best Paper Award , IEEE Global Power, Energy and Communication Conference	Turkey
2019	Winner , 3 Minute Thesis (3MT) competition	Iqra University, Pakistan
2018	Winner , 3 Minute Thesis (3MT) competition	Bahria University, Pakistan
2010	Winner , IET PAKISTAN NETWORK PRESENT AROUND THE WORLD COMPETITION	UET Lahore, Pakistan

Certifications

2024	Basics of Quantum Information , IBM Quantum Learning	Online
2021	Practical Quantum Computer Programming , Khwarizmi Science Society	LUMS, Lahore, Pakistan
2021	Quantum Computing for Beginners , Khwarizmi Science Society	LUMS, Lahore, Pakistan

References available upon request.