



ISHFAQ SULTAN

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SUMMARY

Experienced cybersecurity professional focused on IoT security and cryptography. With a solid technical background in network security and encryption algorithms, I develop and implement security strategies while educating others on best practices. I stay updated on industry trends and seek opportunities to enhance IoT device security in a dynamic work environment.

WORK EXPERIENCE

Ph. D., University of Kashmir, Srinagar

- Conducted research on lightweight cryptography tailored for resource-constrained IoT devices.
- Performed experimentation utilizing ARM Cortex M3/M4 processors.
- Attended expert lectures focusing on cryptography, network security, embedded systems, and ARM architecture.
- Provided teaching and laboratory assistance to the research supervisor.

Lecturer, Green Valley Educational Institute, Ellahi Bagh, Srinagar

- Worked as a lecturer Information Practices at Green Valley Educational Institute, Srinagar, Kashmir.

Facilitator, LINC Education Services, Singapore

- Facilitated multiple units on Programming, Networking, Cyber Security and Digital Literacy to Global Universities.
- Worked as a subject matter expert (SME) for Singapore Institute of Management (SIM) Global Education.

EDUCATION

Master of Science in Electronics

March 2012 - August 2014

University of Kashmir

- Project: Developed carbon monoxide and LPG sensors for air quality detection using PIC 16F88 Microcontroller.

Ph. D. in Electronics

June 2017 - Jan 2025

University of Kashmir

- Submitted Thesis on "Design of Low Power on-chip Encryption Techniques for IoT Applications".

TECHNICAL SKILLS

- Understanding of IoT devices, protocols, and security, including threat mitigation and cryptographic concepts.
- Knowledge of network security technologies such as firewalls, VPNs, and intrusion detection systems.
- Strong communication skills for collaboration with technical and non-technical stakeholders.
- Experience with various IoT and embedded prototyping boards from manufacturers like Silicon Labs, NXP, and Texas Instruments.
- Proficiency in debugging and analyzing IoT hardware platforms using various debug adapters.
- Programming skills in Python, C, C++, and knowledge of MS-SQL, HTML; experience with ARM Keil MDK, Simplicity Studio, and Contiki OS.
- Familiarity with computer hardware assembly, maintenance, and troubleshooting.

CERTIFICATIONS

- Attended four-week training programs on “DSP and Wireless communication” conducted by the Department of Electronics and Communication Engineering National Institute of Technical Teachers Training and Research, Chandigarh (Ministry of Human Resource Development, Government of India).
- Attended a two-month Internship program at National Institute of Electronics and Information Technology (NIELIT) J&K, Srinagar in CCNA Routing and Switching.
- Attended two-week training program on “Internet of Things” at TechTrunk Ventures Private Limited, Noida.
- Completed an online course on Cryptography offered by Stanford University through Coursera online learning platform.

PROJECTS

- Worked as a Junior Research Fellow in the project, “Design of Low Power and Low Resource Cryptographic Procedures for IoT Security Control” funded by the Ministry of Electronics and Information Technology (MeitY) under its project grant: 12(2)/2017-CSR.D.
- Worked on Carbon monoxide and LPG sensors to detect the quality of air using PIC 16F88 Microcontroller under the supervision of Dr. M. Tariq Banday in the Department of Electronics and Instrumentation Technology University of Kashmir, Srinagar.

WORKSHOPS/CONFERENCES

- Presented a paper titled, “A Study of the Design Architectures of Configurable Processors for the Internet of Things” in 3rd International Conference on Contemporary Computing and Informatics (iC3I 2018) Technically Sponsored by IEEE at Amity University, Gurgaon.
- Attended two days National Workshop on, “Data Analytics of Cloud-Based IoT” organized by SSM College of Engineering and Technology Parrihaspora Pattan.
- Presented a Seminar Topic titled “Opportunities to Address Security Challenges on the IoT Node Side” at the 13th session of Jammu and Kashmir Science Congress (JKSC 2018) organized by the University of Kashmir, Srinagar.
- Presented a Seminar Topic titled “Configurable Microprocessors for IoT devices” at National Seminar on Electronic Devices, Systems, and Information Security, 2018 (SEEDS-2018) organized by the Department of Electronics and Instrumentation Technology, University of Kashmir, Srinagar.
- Presented a paper titled, “Analysis and Optimization of Advanced Encryption Standard for the Internet of Things” in 2020 7th International Conference on Signal Processing and Integrated Networks (SPIN) Technically Sponsored by IEEE at Amity University, Noda.

PUBLICATIONS

- I. Sultan, M. Y. Lone, M. Nazish and M. T. Banday, "A Secure Key Expansion Algorithm for Present," in IEEE Sensors Journal, vol. 23, no. 20, pp. 25367-25376, 15 Oct.15, 2023, doi: 10.1109/JSEN.2023.3267386.
- Sultan, I., Banday, M.T. An energy efficient encryption technique for the Internet of Things sensor nodes. Int. j. inf. tecnol. (2024). <https://doi.org/10.1007/s41870-024-01750-z>
- Sultan Ishfaq*, Banday M. Tariq, Sub-1 GHz RF-Based Energy-Efficient Sensor Node for Secure Communication in Low-Power IoT and Embedded Applications, International Journal of Sensors, Wireless Communications and Control 2024; 14 (). <https://dx.doi.org/10.2174/0122103279287156240218044819>
- I. Sultan, B. J. Mir and M. T. Banday, "Analysis and Optimization of Advanced Encryption Standard for the Internet of Things," 2020 7th International Conference on Signal Processing and Integrated Networks (SPIN), Noida, India, 2020, pp. 571-575, doi: 10.1109/SPIN48934.2020.9071380.

- Sultan, I. Banday, M.T. (2019), "Addressing Security Issues of the Internet of Things Using Physically Unclonable Functions', Chapter 6 in Cryptographic Security Solutions for the Internet of Things, IGI Global, USA, Edition: Jan 2019, pages: 308, ISBN: 9781522557425. DOI:10.4018/978-1-5225-5742-5.ch001.
- I. Sultan and M. T. Banday, "A Study of the Design Architectures of Configurable Processors for the Internet of Things," 2018 3rd International Conference on Contemporary Computing and Informatics (IC3I), Gurgaon, India, 2018, pp. 320-325, doi: 10.1109/IC3I44769.2018.9007256.
- I. Sultan and M. T. Banday, "Ultra-Low Power Microcontroller Architectures for the Internet of Things (IoT) devices," 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT), Tirunelveli, India, 2023, pp. 482-488, doi: 10.1109/ICSSIT55814.2023.10060949.
- S. Banday, M. Nazish, I. Sultan and M. T. Banday, "Performance Comparison of Software-Efficient Implementations of the PRESENT Block Cypher," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-5, doi: 10.1109/STCR55312.2022.10009097.
- I. Tariq, M. Nazish, S. Ashaq, I. Sultan and M. T. Banday, "A Performance Comparison of Hashed and Authenticated Advanced Encryption Standard," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-5, doi: 10.1109/STCR55312.2022.10009112.
- I. Syed, M. Nazish, I. Sultan and M. T. Banday, "Implementation Techniques for GIFT Block Cypher: A Real-Time Performance Comparison," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-5, doi: 10.1109/STCR55312.2022.10009581.
- M. Ali, M. Nazish, S. Ashaq, I. Sultan and M. T. Banday, "Design of Hybrid Glitch-Reduction Techniques for Loop Unrolled SIMON Block Cypher," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-6, doi: 10.1109/STCR55312.2022.10009429.
- S. Ashaq, M. Nazish, M. Ali, I. Sultan and M. Tariq Banday, "FPGA Implementation of PRESENT Block Cypher with Optimised Substitution Box," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-6, doi: 10.1109/STCR55312.2022.10009366.
- M. Rouf, M. Nazish, I. Sultan and M. T. Banday, "Implementation of Area and Power Optimised ARM Cortex-M Cores on FPGA," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-6, doi: 10.1109/STCR55312.2022.10009282.
- N. A. Lone, M. Nazish, I. Sultan and M. T. Banday, "Optimised Hardware Implementation of AES for Improving Energy Efficiency of Low-Power Devices," 2022 Smart Technologies, Communication and Robotics (STCR), Sathyamangalam, India, 2022, pp. 1-5, doi: 10.1109/STCR55312.2022.10009468.
- Ul Islam, M., Nazish, M., Sultan, I., Tariq Banday, M. (2024). ASCON Lightweight Security Standard for the Internet of Things Devices—A Study. In: Hassanien, A.E., Anand, S., Jaiswal, A., Kumar, P. (eds) Innovative Computing and Communications. ICICC 2024. Lecture Notes in Networks and Systems, vol 1024. Springer, Singapore. https://doi.org/10.1007/978-981-97-3817-5_36.