

MOHSIN KHAN

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Address: Skolegata 41, 9006 Tromsø, Norway

Objective: PhD in Cyber Security with extensive experience in lightweight cryptography, secure system design, and distributed IoT security. Conducted a comprehensive evaluation of lightweight cryptographic algorithms and developed custom benchmarking tools, which were applied to a set of prominent algorithms. Developed a secure bootstrapping and policy enforcement architecture using blockchain to protect devices operating in distributed topologies. I am keen to contribute my academic experience in data science further to support research and student learning.

EDUCATION

Doctor of Philosophy in Cyber Security Nov 2021 - Nov 2025

UiT The Arctic University of Tromsø, Norway

Title Information Flow Control (IFC) model based on lightweight cryptography in IoT devices merged alongside distributed cloud

Outcome Evaluated approximately 150 lightweight algorithms and developed a scalable blockchain-based security architecture for distributed IoT infrastructures. The project progressed through surveys (1 & 2), benchmarking tools (1, 2, & 3), and distributed security framework (DTEA) PoC.

Supervisors: Prof. Håvard Johansen, Prof. Dag Johansen & Dr. Elisavet Kozyri

Master of Business Administration, Operations Management JAN 2019 - JUL 2022

Indira Gandhi National Open University, New Delhi, India

Title Impact of Management Information Systems (MIS) on Banking efficiency

Outcome Analyzed MIS impact at J&K Bank, revealing strong positive links to efficiency and service through Chi-square analysis.

Supervisor: Dr. Mohammad Ashraf Malla

Master of Technology, Computer Science and Technology AUG 2018 - Nov 2020

Central University of Jammu, Jammu and Kashmir, India

Title Traffic Jam Minimization and Accident Avoidance System using IoT

Outcome Developed a CAV-VANET system for IoT-based traffic congestion and accident reduction, modeling phantom jams, lane shifts, and overtaking; published in Springer LNEE and IJACI.

Supervisor: Dr. Bhavna Arora

Bachelor of Technology, IT and Telecommunication Engineering Aug (2014 - 2018)

Baba Ghulam Shah Badshah University, Jammu and Kashmir, India

Title Smart and Secure Home

Outcome Developed an IoT-based home automation system integrating multiple components on a single Arduino, with real-time monitoring and control; published in JSRCSEIT.

Supervisor: Prof. Malik Mubasher Hassan

ACADEMIC COURSES (DOCTOR OF PHILOSOPHY)

SECURITY Information Flow Control (IFC) - Theoretical Principles, Enforcement, and Case Study of a Dynamic Implementation

Advanced Distributed Systems

RESEARCH How to communicate your research

Take Control of your PhD Journey: From (p)reflection to publishing

ETHICS Philosophy of science and ethics

OTHERS Science, Technology and Society: RRI course Digital Life Norway

WORK EXPERIENCE

Data Engineer, Blackbuck Insight, Bangalore, India

JAN - NOV 2021

Outcome Migrated and processed big datasets from on-premises infrastructure to AWS cloud for TransUnion, improving data accessibility and reducing query latency by 40%.

→ **Keywords** MapReduce, HDFS, PySpark, Apache, Python, Linux, AWS Cloud Services (S3, EC2, EMR, Lambda)

PUBLICATIONS (TOTAL - 11)

CONFERENCE - 5 | JOURNAL - 3 | UNDER REVIEW - 3

Conference

M Khan, H Dagenborg, D Johansen

UNDER REVIEW |  | LIGHTSEC 2025

A Comparative Analysis of Lightweight Hash Functions Using AVR ATXMega128 and ChipWhisperer

→ Keywords: NIST, ISO/IEC 29192-5, ChipWhisperer, ATXmega128, Sponge Construction, E-RANK Metric

M Khan, H Dagenborg, D Johansen

ACCEPTED |  | SECRIPT 2025

Software Benchmarking of NIST Lightweight Hash Function Finalists on Resource-Constrained AVR Platform via ChipWhisperer

→ Keywords: NIST, ChipWhisperer, ATXmega128, Sponge Construction, E-RANK

AB Ovesen, **M Khan**, H Dagenborg and D Johansen

ACCEPTED | FMEC 2025

System Support for Accountable and Trusted Data Collection and Fog Processing in Remote Electronic Monitoring

→ Keywords: Edge Computing, Fog Processing, Remote Electronic Monitoring (REM), Data Provenance

M Khan, D Johansen, H Dagenborg

 |  | SciSEC 2024

Performance Evaluation of Lightweight Cryptographic Ciphers on ARM Processor for IoT Deployments

→ Keywords: Lightweight Cryptography, ARM Processor, Software Performance

A Samir, A Al-Wosabi, **M Khan**, H Dagenborg

 | ESOC 2023

A Multi-pronged Self-adaptive Controller for Analyzing Misconfigurations for Kubernetes Clusters and IoT Edge Devices

→ Keywords: Kubernetes, Hierarchical Hidden Markov Models, Role-Based Access Control, IoT Edge Devices

M Khan, B Arora

 | ETCCS 2020

Traffic Jam Minimization and Accident Avoidance System Using IoT

→ Keywords: Internet of Things (IoT), Level-2 Vehicle Automation, Phantom Jams

Journal

M Khan, E Kozyri, D Johansen, H Dagenborg

UNDER REVIEW | IEEE ACCESS

Survey of Lightweight Hardware-Based Hash Functions for Secure Communication in Resource-Restricted IoT Environments

→ Keywords: Lightweight hash functions, IoT security, hardware implementation, sponge construction, cipher-based construction, comparative analysis

M Khan, E Kozyri, D Johansen, H Dagenborg

UNDER REVIEW | CSUR ACM

Systematic Review of Lightweight Cryptographic Algorithms

→ Keywords: Lightweight cryptography, symmetric & asymmetric ciphers, survey, comparative analysis

M Khan, H Dagenborg, D Johansen

 |  | FUTURE INTERNET MDPI 2024

Performance Evaluation of Lightweight Stream Ciphers for Real-Time Video Feed Encryption on ARM Processor

→ Keywords: Lightweight Stream Ciphers, IoT Security, Performance, E-RANK, Embedded Cryptography

M Khan, B Arora

 | IJACI IGI GLOBAL 2021

Traffic Congestion Reduction and Accident Circumvention System via Incorporation of CAV and VANET

→ Keywords: MATLAB/Simulink, Connected Automated Vehicles (CAV), Vehicular Ad Hoc Network (VANET), Phantom Jam Reduction, IoV

MM Hassan, M Khan, et. al.

 | IJSRCSEIT 2018

Smart n Secure Home Using IoT

→ Keywords: Internet of Things (IoT), RFID Access Control, Arduino, Remote Control and Monitoring

CERTIFICATIONS

AWS	Amazon Web Services Certified Developer – Associate 🔗	FEB 2021
DATABRICKS	Certified Associate Developer for Apache Spark 3.0 – Python 🔗	APRIL 2021
AICTE	Real-Time Power System Analysis and Smart Grid 🔗	MARCH 2019
NCERT	Educational Admin Mgmt and Leadership in School Education 🔗	MAY 2019

WORKSHOPS

Finse Cyber Security Winter School organized by the University of Oslo, Norway. 🔗	APR 28 - MAY 2 2021
Reykjavík Summer School on Secure and Reliable Distributed Systems organized by Ulm University, Germany. 🔗	JUN 13 - JUN 24 2022
Eurosys Workshop: Principles and Practice of Consistency for Distributed Data in Rennes, France.	APRIL 5 2022
Internet of Things workshop organized by AICTE ATAL Academy at the Central University of Jammu. 🔗	OCT 14 - OCT 18 2019
Artificial Intelligence workshop organized by AICTE ATAL Academy at the Central University of Jammu. 🔗	Nov 18 - Nov 22 2019

SKILLS

LANGUAGE	Procedural (C), Object-Oriented (C++, C#, Python, JavaScript, and Solidity), Numerical (MATLAB), Markup (HTML and XML), Database (SQL)
SECURITY	Cryptography, Hash Functions, Information Flow Control (IFC), Access Control Mechanisms, IoT & Embedded Security, Blockchain & Distributed Trust
EMBEDDED SYS	ChipWhisperer (AVR ATxmega128, STM32F3), Raspberry Pi, Arduino, Jetson
LIBRARIES	Pandas, Numpy, Matplotlib, Cryptography, Ethereum
CLOUD	Docker, AWS, Kubernetes
TOOLS	Visual Code, Git, AVR/Microchip Toolchains, Simulink/Matlab, Hyperledger, Truffle

ACHEIVEMENTS

BEST PAPER AWARD	“Smart n Secure Home using IoT” presented at the National Conference on Recent Advances in Computer Science and IT (NCRACIT). 🔗
CERT OF APPRECIATION	For exemplary performance in the university-level drawing competition at Baba Ghulam Shah Badshah University (BGSBU). 🔗

ACTIVITIES

Academic

INTERNAL	Henrik Monsen, Master Student, UiT Tromsø	SPRING 2024
ASSESSOR	Hauk Storjord, Master Student, UiT Tromsø	SPRING 2025, 25
TEACHING	Advanced Distributed Systems, UiT Tromsø	SPRING 2024, 25
ASSISTANT	Computer Communications, UiT Tromsø	FALL 2022, 23, 24
	Computer Security, UiT Tromsø	SPRING 2022, 23

Management

VOLUNTEER	IEEE CCGRID Conference 2025. 🔗
ORGANIZER	PhD Seminars at UiT.

Member

Digital Life Norway	SINCE 2023
Institute for Systems and Technologies of Information, Control and Comm 🔗	SINCE 2025
International Information System Security Certification Consortium 🔗	SINCE 2025

INTERESTS

SPORTS	Bodybuilding, Fitness Training, Strength Training
OTHERS	Leadership, Management, Finance, Programming
LANGUAGES	Hindi, Urdu, English, Kashmiri (Native), Norwegian (Beginner - actively learning)

REFERENCES AVAILABLE ON REQUEST

havard.johansen@uit.no	Håvard Johansen , Professor, Department of Computer Science <i>UiT The Arctic University of Norway</i>
dag.johansen@uit.no	Dag Johansen , Professor, Department of Computer Science <i>UiT The Arctic University of Norway</i>
elisavet.kozyri@uit.no	Elisavet Kozyri , Associate Professor, Department of Computer Science <i>UiT The Arctic University of Norway</i>