



SeoulTech University

Seoul National University of Science and
Technology (**SeoulTech**) is in Nowon-gu, Seoul,
South Korea, established **1910**



Ubiquitous Computing and Security Laboratory

SeoulTech UCS Lab
Ubiquitous Computing & Security Laboratory

SeoulTech University

• **SeoulTech** is a large and comprehensive university consisting of:

- Six (6) Colleges,
- 23 Departments,
- Seven Graduate Schools,
- 11,500+ Student enrolment, and
- Spacious campus of 508,690 square meters (124 acres).





SeoulTech
University

College of Information & Communication Engineering

- ❖ Dept. of Electrical and Information Engineering
- ❖ Dept. of Electronics and IT Media Engineering
 - Electronic Engineering
 - Media IT Engineering
- ❖ Dept. of Smart ICT Convergence Engineering
- ❖ **Dept. of Computer Science and Engineering**

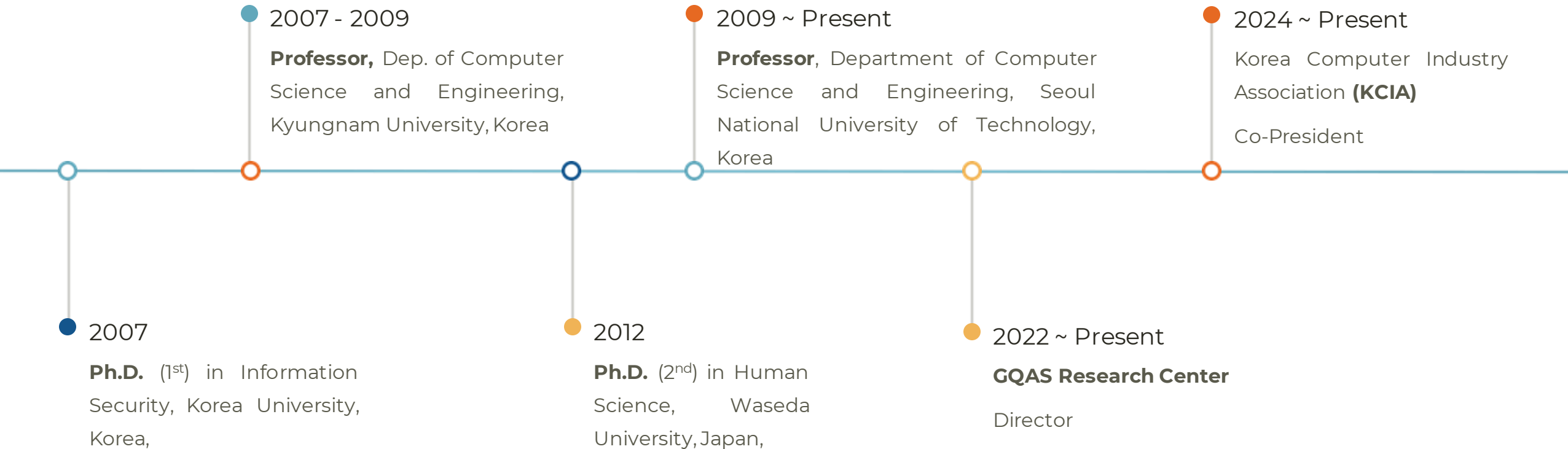


Prof. James (J.H) Park

Professor of Cybersecurity Dept. of Computer Science and Engineering, Seoul National University of Science and Technology

- A Brief Intro. to my Background
- Research Interests & Courses I Teach
- My Lab (UCS-Lab) | Students and Projects

Prof. James (J.H) Park's Background



Recent Courses Taught



Information Security Theory (Undergraduate)

A comprehensive overview of information security, addressing the increasing threats to data integrity during collection, processing, storage, and transmission.



Special Topics in IoT Security (Graduate)

Advanced topics IoT ecosystem security. Exploring unique vulnerabilities of IoT devices and networks, focusing on the integration of security measures across various IoT architectures.



Special Topics in AI Security (Graduate)

Fundamental theories of artificial intelligence security, covering both defensive and offensive applications of AI in cybersecurity.

Professor James Park has taught a range of foundational and applied computer and information security courses over the years, focusing on key technologies and platforms.

Research Interests



Security Issues

IoT Security (Internet of Things Security)

Network Security

-AI Security (Artificial Intelligence Security)

Quantum Information and
Communication Security.

Cloud Security, Big Data Security

Blockchain Security

Digital Forensics

Network and System Security

Professor Park has conducted extensive research and taught courses across various security disciplines, emphasizing both foundational concepts and emerging technologies.

Research Performance



Jong Hyuk Park

[SeoulTech](#), Dept. of Com. Sci. & Eng.

Verified email at seoultech.ac.kr - [Homepage](#)

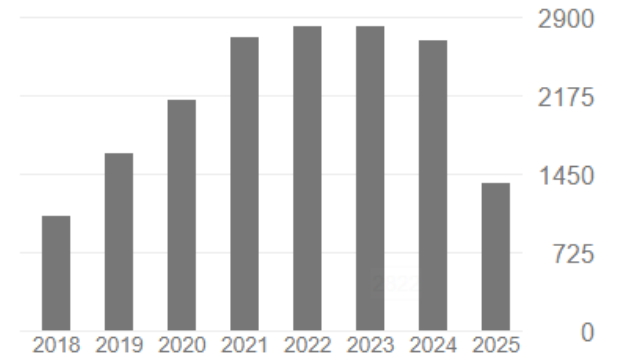
AI Security IoT Blockchain Quantum



인용

[모두 보기](#)

	전체	2020년 이후
서지정보	21271	14613
h-index	70	59
i10-index	311	195



Intelligent Applications and Services

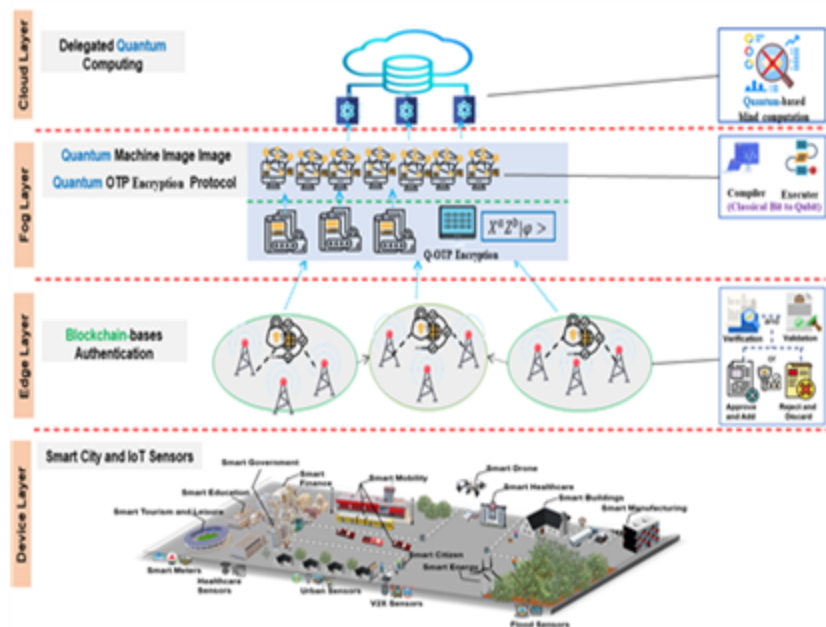
Professor Park has published more than 700 papers in international journals.

Over 100 papers were published Q1 journals (JCR top 25%).

* 21,271 total citations based on Google Scholar (h-index 70, i10-index 311)

Professor Park is listed among TOP 2% World Scientist by Stanford University

UCS LAB Research Projects



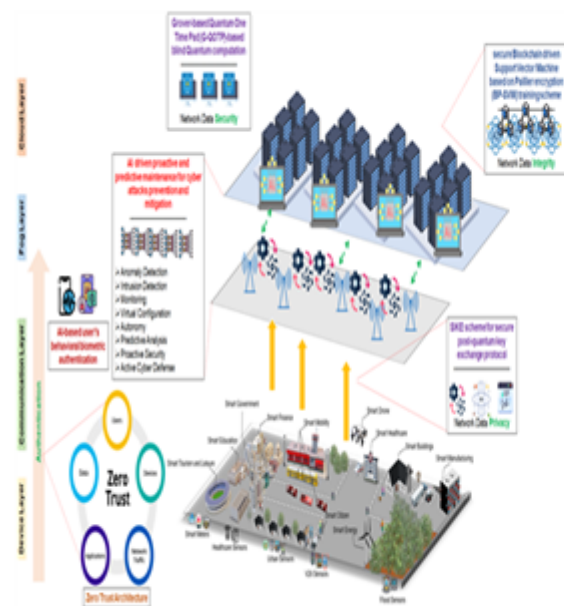
Blockchain-based Delegated Quantum Computing for Secure Industrial IoT Networks Communication

Research Support: National Research Foundation of Korea

Period: 2022.12.26~ 2025.12.25

This study studies the underlying technology for developing a blockchain-based delegated quantum cloud that provides secure authentication between various devices and efficient and secure services of data used in the cloud in a large-scale smart city environment

UCS LAB Research Projects



Development of a Quantum Machine Learning Solution for Secure and Efficient Cyber Attacks Response

Research Support: National Research Foundation of Korea (NRF), Korea

Period: 2023.07.01 ~ 2026.06.30

This study aims to develop safe and efficient wired and wireless communication networks using next-generation technologies such as quantum machine learning, post-quantum encryption techniques, blockchain, and AI, and secure the source technology of national strategic technology by developing quantum machine learning-based cybersecurity attack technology for sustainable wired and wireless communication network services.

UCS LAB Research Projects



Real-time face de-identification technology that enables same-subject connection analysis in facial recognition CCTV

Research Support: Korea Internet & Security Agency (KISA)

Period: 2023.04.01 ~ 2025.12.31

This study conducts research on real-time face de-identification technology that enables connection analysis of the same subject to protect personal information in a facial recognition CCTV environment.

UCS LAB Research Projects

STEP1 환경 분석 STEP2 위협 모델링 STEP3 위협 탐지 STEP4 대응 및 완화 STEP5 보안 요구사항 도출



Development of Efficient and Reliable AI-based Cyber Attack Detection Technology to Provide Safe Services of IT&OT Convergence Control System

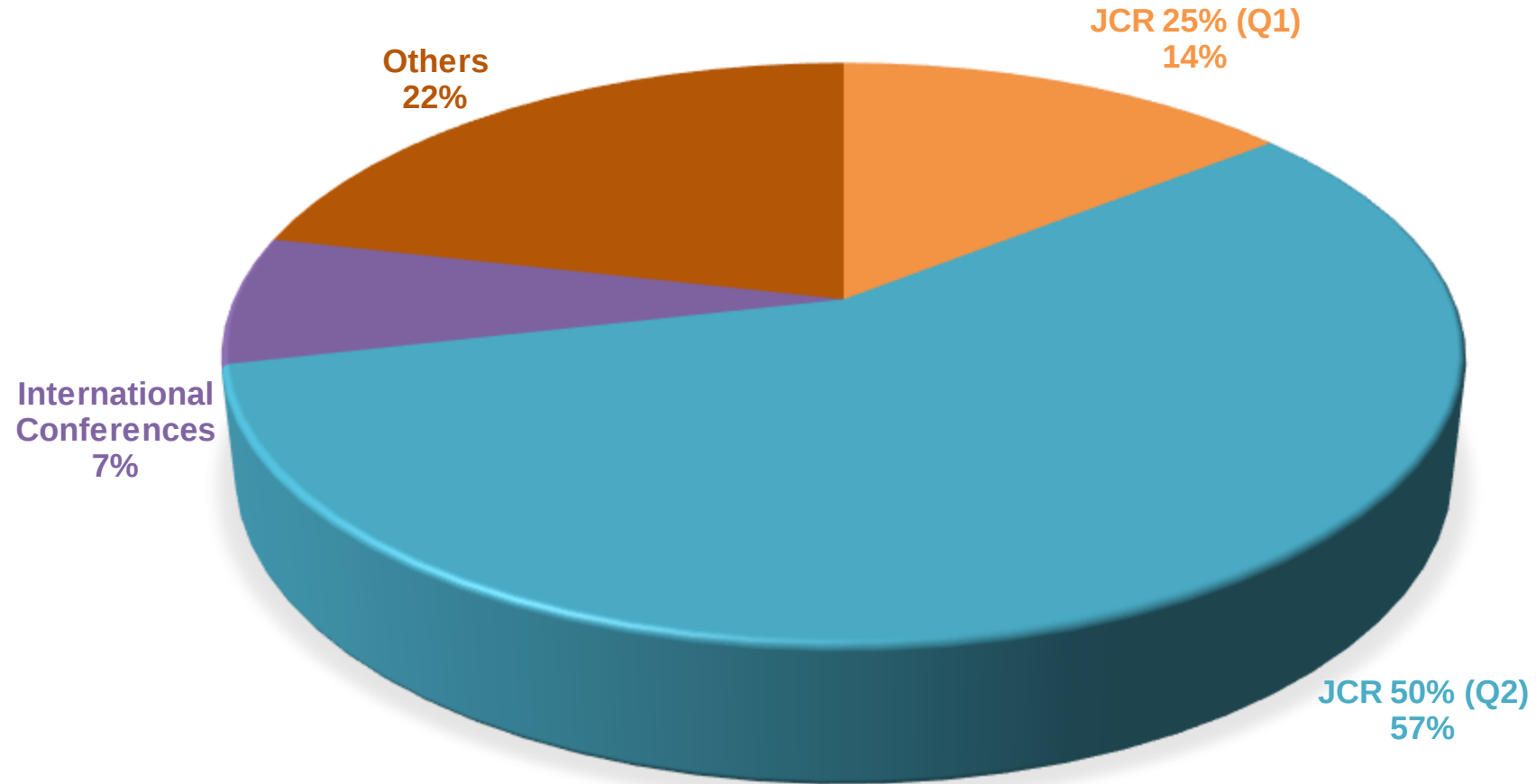
Research Support: Korea Institute for Advancement of Technology (KIAT), Korea

Period: 2024.09.01 ~ 2027.08.31

Develop efficient and reliable AI-based cyber attack detection technology to ensure the secure operation of IT&OT converged control systems, considering the security paradigm of industrial digital transformation.

Summary of Research Publications & Patents

PAPERS AND RESEARCH PUBLICATIONS



Summary of Research Publications & Patents

No	Application/Registration Number	Country	Patent Title
1	10-2025-0007762	Korea	Digital Twin Model-based Framework System and Method for Resource Optimization in Industrial IoT (IIoT) Networks
2	10-2025-0020711	Korea	SYSTEM AND METHOD FOR COLLECTING AND TRANSMITTING BIO-SIGNALS USING PRIORITY-BASED DRONE CONTROL
3	10-2025-0023173	Korea	ANDROID MALWARE DETECTION APPARATUS AND METHOD USING DEEP REINFORCEMENT LEARNING
4	10-2025-0061310	Korea	METHOD FOR DETECTING DDOS ATTACKS AND SYSTEM FOR PERFORMING THE SAME
5	10-2025-0066272	Korea	DEEPFAKE DETECTION SYSTEM AND DEEPFAKE DETECTION METHOD
6	10-2025-0066288	Korea	IOT CYBER THREAT DETECTION SYSTEM AND METHOD THEREOF
7	10-2025-0066259	Korea	SYSTEM AND METHOD FOR EDGE-CLOUD BASED FACIAL ANONYMIZATION
8	10-2025-0044248	Korea	ECONOMIC AND MARKET PREDICTION APPARATUS AND METHOD USING QUANTUM-ENHANCED MACHINE LEARNING
9	10-2025-0089382	Korea	MEDICAL FEDERATED LEARNING BLOCKCHAIN SYSTEM AND METHOD THEREOF
10	10-2025-0022531	Korea	PRIVACY-PRESERVING SYSTEM AND METHOD FOR FEDERATED LEARNING OF LARGE LANGUAGE MODEL

Summary of Research Publications & Patents

No	Application/Registration Number	Country	Patent Title
11	10-2022-0063006 / 10-2564375	Korea	Blockchain-based Distributed Quantum Network System and Method for IoT Networks
12	PCT/KR2022/009628	United States	Blockchain-based Distributed Quantum Network System and Method for IoT Networks
13	10-2023-0060386	Korea	Blockchain-based Data Trust Management System in Industrial IoT Environments
14	10-2023-0061480	Korea	Method for Secure Storage and Sharing of Electronic Health Records in the Field of Medical Informatics
15	10-2024-0013722	Korea	Blockchain and Federated Learning Convergence Technique for Privacy Protection in Industry 5.0 Environments
16	10-2024-0039365	Korea	V2V Wireless Charging Method and System for Green Vehicle Internet Networks
17	10-2024-0048187	Korea	Industrial IoT-based Decision-making System and Method
18	10-2024-0064149	Korea	Digital Twin Device and Modeling Method for Modeling Vehicle Edge Computing Systems
19	10-2024-0105246	Korea	Federated Learning-based Cyber Threat Intelligence System and Method
20	10-2024-0117374	Korea	Method for Allocation and Storage of IoT Data Utilizing Digital Twin

Research Publications in 2025

No.	Journal	Impact Factor	Publication
1	Information Fusion	15.5	Multi-view learning and model fusion framework for threat detection in multi-protocol IoMT networks
2	Computer Networks	4.6	A comprehensive survey on large language models for multimedia data security: challenges and solutions
3	Sensors	3.5	FL-TENB4: A Federated-Learning-Enhanced Tiny EfficientNetB4-Lite Approach for Deepfake Detection in CCTV Environments
4	Sensors	3.5	A Comprehensive Survey of Privacy-Enhancing and Trust-Centric Cloud-Native Security Techniques Against Cyber Threats
5	HCIS	3.0	Blockchain-Enabled IDPS and Federated Learning for Enhancing CPS Security against Advanced Persistent Threats in Zero Trust Architectures
6	HCIS	3.0	DRL for Energy, Latency, and Throughput Optimization in UAV-Assisted WBANs
7	HCIS	3.0	Hybrid Quantum Fuzzy Neural Network Approach- Based SNS Sentimental Analysis for Stock Market Prediction

Research Publications in 2025

No.	Journal	Impact Factor	Publication
8	Journal of Supercomputing	2.7	Quantum-resilient security for 6G networks: a comprehensive survey on challenges, solutions, and research opportunities
9	Electronics	2.6	AIDS-Based Cyber Threat Detection Framework for Secure Cloud-Native Microservices
10	Applied Sciences	2.5	VAE-Based Real-Time Anomaly Detection Approach for Enhanced V2X Communication Security
11	Computers, Materials & Continua	1.7	Edge-Fog Enhanced Post-Quantum Network Security: Applications, Challenges and Solutions

Research Publications in 2024

No.	Journal	Impact Factor	Publication
1	Information Fusion	14.8	FL-CTIF: A federated learning based CTI framework based on information fusion for secure IIoT
2	Journal of Advanced Research	11.4	Maximizing throughput in NOMA-enabled industrial IoT networks using digital twin and reinforcement learning
3	Journal of Network and Computer Applications	7.7	Leveraging application permissions and network traffic attributes for Android ransomware detection
4	Future Generation Computer Systems	6.2	GRU-based digital twin framework for data allocation and storage in IoT-enabled smart home networks
5	Future Generation Computer Systems	6.2	Digital twin-assisted resource allocation framework based on edge collaboration for vehicular edge computing
6	Future Generation Computer Systems	6.2	Digital Twin and federated learning enabled cyberthreat detection system for IoT networks
7	Computer Networks	4.4	Privacy-preserving and scalable federated blockchain scheme for healthcare 4.0

Research Publications in 2024

No.	Journal	Impact Factor	Publication
8	Human-centric Computing and Information Sciences	3.9	Federated Learning-Enabled Zero-Day DDoS Attack Detection Scheme in Healthcare 4.0
9	Human-centric Computing and Information Sciences	3.9	PoAh-Enabled Federated Learning Architecture for DDoS Attack Detection in IoT Networks
10	Journal of Systems Architecture	3.8	A Comprehensive Survey of Digital Twins: Applications, Technologies and Security Challenges
11	Journal of Internet Technology	0.9	CCTV Footage De-identification for Privacy Protection: A Comprehensive Survey

Research Publications in 2023

No.	Journal	Impact Factor	Publication
1	Information Fusion	14.8	FusionFedBlock: Fusion of blockchain and federated learning to preserve privacy in industry 5.0
2	Journal of Biomedical and Health Informatics	7.7	Lightweight Authentication Scheme for IoT based E-Healthcare Service Communication
3	Journal of Biomedical and Health Informatics	7.7	Federated Learning-based secure Electronic Health Record sharing scheme in Medical Informatics
4	HCIS	3.9	A Comprehensive Survey on Blockchain for Secure IoT- enabled Smart City beyond 5G: Approaches, Processes, Challenges, and Opportunities
5	HCIS	3.9	Comprehensive Survey on AI-Based Technologies for Enhancing IoT Privacy and Security: Trends, Challenges, and Solutions
6	Sensors	3.4	Secure and Reliable Big-Data-Based Decision Making Using Quantum Approach in IIoT Systems

Research Publications in 2023

No.	Journal	Impact Factor	Publication
7	Applied Sciences	2.5	Privacy-preserving and scalable federated blockchain scheme for healthcare 4.0
8	Journal of Information Processing Systems	0.8	A Novel Smart Contract based Optimized Cloud Selection Framework for Efficient Multi-Party Computation
9	Journal of Information Processing Systems	0.8	Recent Trends on Smart City Security: A Comprehensive Overview

Research Publications in 2022

No.	Journal	IF	Publication
1	IEEE Transactions on Industrial Informatics	11.7	TaLWaR: Blockchain-Based Trust Management Scheme for Smart Enterprises With Augmented Intelligence
2	IEEE Transactions on Industrial Informatics	11.7	SecureIIoT Environment: Federated Learning Empowered Approach for Securing IIoT From Data Breach
3	Sustainable Cities and Society	10.5	Blockchain-enabled Secure Framework for Energy-Efficient Smart Parking in Sustainable City Environment
4	Journal of Network and Computer Applications	7.7	Blockchain-based delegated Quantum Cloud architecture for medical big data security
5	JBHI	7.7	Federated Learning-based secure Electronic Health Record sharing scheme in Medical Informatics
6	Information Processing & Management	7.4	SecureCPS: Cognitive inspired framework for detection of cyber attacks in cyber-physical systems

Research Publications in 2022

No.	Journal	IF	Publication
7	Computers & Industrial Engineering	6.7	CoVAC: A P2P smart contract-based intelligent smart city architecture for vaccine manufacturing
8	HCIS	3.9	The Future of Metaverse: Security Issues, Requirements, and Solutions
9	HCIS	3.9	MetaQ: A Quantum Approach for Secure and Optimized Metaverse Environment
10	HCIS	3.9	A Secret Sharing-Based Distributed Cloud System for Privacy Protection
11	HCIS	3.9	Scalable Lightweight Blockchain-Based Authentication Mechanism for Secure VoIP Communication

Research Publications in 2022

No.	Journal	IF	Publication
12	Journal of Ambient Intelligence and Humanized Computing	3.6	Energy-efficient resource allocation in blockchain-based Cybertwin-driven 6G
13	Sensors	3.4	A Blockchain-Enabled Secure Digital Twin Framework for Early Botnet Detection in IIoT Environment
14	Sensors	3.4	Blockchain-Based Distributed Information Hiding Framework for Data Privacy Preserving in Medical Supply Chain Systems
15	Mathematical Biosciences and Engineering	2.6	A Lightweight authentication scheme for IoT against Rogue Base Station Attacks
16	CMC-Computers, Materials & Continua	2.1	OTP-Based Software-Defined Cloud Architecture for Secure Dynamic Routing

Lab Members (2025)

Lab Director



James (J.H) Park

Post-Doc Researcher, Lab Vice-Director



Abir EL.,
**Quantum AI/
IoT
Security/Blockchain**

As of the first semester of 2025, UCS has **15 active lab members**, including 1 postdoctoral researcher, 9 PhD candidates, and 5 master's students, along with 1 intern and 3 independent senior researchers.

- A total of **27 members have graduated** and are now working in high-tech companies, universities, and research centers.

PhD Candidate, Lab Leader



Jo Byeong-hyeon,
**Quantum
Cryptography/
AI Security**

PhD Candidates



**Jeremiah S. R.,
Machine Learning/
Network-AI security**



**Jang Kyeong-won,
Quantum
Information
Technology/IIoT
Security**



**Wonmin Kang,
Wireless
Communication
Security**



**Ankit Kumar,
AI based Deep Fake
Detection/Mitigation**

PhD Candidates



**Eun-Hey Lee,
AI-based CCTV
Privacy**



**Seo Yeon Moon
Quantum
Information
Technology/IoT
Security**



**Azhar Abbas,
Advanced
Cyberthreat
Detection/AI
based Mitigation**



**Tae Hwan Lee,
Blockchain based
Security/Cognitive
City Security**

Master Students



Min Ji Kim,
Quantum
AI/Network Security



Andres Lor,
Quantum
Network/6G Security



Younas Tal.,
V2V
Security/Smart
Transportation
Security



Tuba Arif,
Network
Forensic/Blockchain
Security



Na Yeong Kim,
Advanced AI
Security/Cognitive
City Security



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