

The 2023 World Congress on Information Technology Applications and Services

**"Advanced Mobile, Communications, Security,
Multimedia, Vehicular, Cloud, IoT, and Computing"**

February 20-22, 2023
Jeju, Korea

Organized by
World IT Congress & KIPS SWRG



2023 International Conferences
(Sponsored/Technically Sponsored by KIPS/KIPS SWRG)

**The 6th The International Conference on Big data, IoT, and Cloud Computing
(BIC 2023)**

- August 16-18, Jeju, Korea

**The 24th International Conference on Parallel and Distributed Computing, Applications
and Technologies (PDCAT'23)**

- August 16-18, Jeju, Korea

General Chairs' Message from the World IT Congress 2023

The 2023 World Congress on Information Technology Applications and Services (World IT Congress 2023) - "Advanced Mobile, Communications, Security, Multimedia, Vehicular, Cloud, IoT, and Computing" will be held in Jeju, Korea on February 20~22, 2023. The World IT Congress 2023 is aimed at the address key themes on "Advanced Mobile, Communications, Security, Multimedia, Vehicular, Cloud, IoT, and Computing." World IT Congress 2023 will be the most comprehensive conference focused on information technology, computing, and applications, and will provide an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of Advances in IT, Applications, and Services. In addition, the conference will publish high quality papers which are closely related to the various theories and practical applications in advanced IT. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in this important subject.

Accepted and presented papers highlight new trends and challenges of computer science and its applications. The presenters will show how new research could lead to novel and innovative applications. We hope you will find these results useful and inspiring for your future research.

We would like to express our sincere thanks to Steering Committee: James J. (Jong Hyuk) Park (SeoulTech, Korea), Hamid R. Arabnia(The University of Georgia, USA), Han-Chieh Chao (National Ilan University, Taiwan), Young-Sik Jeong (Dongguk University, Korea), Jianhua Ma (Hosei University, Japan), Qun Jin (Waseda University, Japan). Our special thanks go to the program chairs, all program committee members and all the additional reviewers for their valuable efforts in the review process, which helped us to guarantee the highest quality of the selected papers for the conference.

We cordially thank all the authors for their valuable contributions and the other participants of this conference. The conference would not have been possible without their support. Thanks are also due to the many experts who contributed to making the event a success.

World IT Congress 2023
General Chairs

Jungho Kang, Baewha Women's University, Korea
Yi Pan, Georgia State University, USA
Ka Lok Man, Xi'an Jiaotong-Liverpool University, China

Program Chairs' Message from the World IT Congress 2023

Welcome to the 2023 World Congress on Information Technology Applications and Services (World IT Congress 2023) - "Advanced Mobile, Communications, Security, Multimedia, Vehicular, Cloud, IoT, and Computing", which will be held in Jeju, Korea on February 20~22, 2023. This congress will be the most comprehensive conference focused on the various aspects of Advances in IT, Applications, and Services (AITA).

This congress provides an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of computer science. In addition, the conference contains high quality papers which are closely related to the various theories and practical applications in computer science. Furthermore, we expect that this congress and its publications will be a trigger for further related research and technology improvements in this important subject. This congress contains high quality research papers submitted by researchers from all over the world. Each submitted paper was peer-reviewed by reviewers, who are experts in the subject area of the paper. Based on the review results, the program committee accepted papers.

For organizing this congress, the support and help of many people is needed. First, we would like to thank all authors for submitting their papers. We also appreciate the support from program committee members and reviewers who carried out the most difficult work of carefully evaluating the submitted papers.

We would like to give my special thanks to James J. (Jong Hyuk) Park (SeoulTech, Korea), Hamid R. Arabnia(The University of Georgia, USA), Han-Chieh Chao (National Ilan University, Taiwan), Young-Sik Jeong (Dongguk University, Korea), Jianhua Ma (Hosei University, Japan), Qun Jin (Waseda University, Japan) as the Steering Committee of World IT for their strong encouragement and guidance to organize the conference. We would like to thank World IT 2023 General Chairs for their advices to make possible organization of The World IT 2023. We would like to express special thanks to execute members for their timely unlimited support.

World IT Congress 2023
Program Chairs

Khamphoui Southisombath, National University of Laos, Laos
Jin Wang, Changsha University of Science and Technology, China
Muhammad Khurram Khan, King Saud University, Kingdom of Saudi Arabia
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Byoungsoo Koh, KOCCA(Korea Creative Content Agency), Korea

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Joon-Min Gil, Catholic University of Daegu, Korea

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Sung Gil Kim, VAIV Company inc., Korea

Bong Sang Seo, ALL4LAND co.,LTD, Koreab

Se Jong Kim, SJ Info & Communications CO.,LTD, Korea

Tae Yoon Kwon, Neighbor system co.,Ltd , Korea
Han Su Cheon, Selim TSG Co.,Ltd , Korea
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Michael Hwa Young Jeong, Kyung Hee University, Korea

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Tzung-Pei Hong, National University of Kaohsiung, Taiwan

International Advisory Committee

Changhoon Lee, SeoulTech, Korea

Invited Speaker



Virtual Reality for Metaverse Applications

Prof. Byeong-Seok Shin

Professor Inha University, Korea
Director of MEDIAAI Lab.

Abstract:

Virtual Reality is a computer simulation system that can create and experience virtual worlds. It uses a computer to generate an environment. Recently, as interest in metaverse has been concentrated, various studies are being conducted to establish and utilize the metaverse world in the IT field. After creating a virtual world, virtual reality technology is the most important tool for representing and interacting with the objects in the virtual world realistically. In this lecture, I will briefly explain what virtual reality technology is, how these technologies have been developed, and in what areas they are currently being used. Through this, I hope that it will be helpful to those who are interested in metaverse.

Biography:

Byeong-Seok Shin is IEEE and ACM Member since 1996. He is a professor of the department of Electronic and Computer Engineering in Inha University Korea. He received his Ph.D degree of computer engineering in Seoul National University Korea in 1997. His research area includes Computer Graphics, Virtual and Augmented Reality and Computer Games. Especially, he has worked in medical imaging and visualization field with several medical specialists. He has written more than hundreds of research papers on the famous journal and conference proceedings. He was a president of Korean Computer Graphics society from 2016 to 2017. Currently he is a president of Korean Institute of Next Generation Computing as well as a vice-president of Korea Information Processing Society (KIPS), The Korean Institute of Information Scientists and Engineers, and Korean Society of Human Computer Interaction.

PROGRAM SCHEDULE FOR WOLRD IT CONGRESS 2023

Day 1, February 20, 2023			
Time	Min	HALL A	HALL B
09:30-10:00	30	Registration	
10:00-12:00	120	Session A-1 WITC 2023 Chair: Yan Li	2023 Defense Future Challenge Conference (Private Event)
12:00-13:00	60	Lunch	
13:00-13:40	40	Keynote Speech Byeong-Seok Shin “Virtual Reality for Metaverse Applications” Chair: Joon-min Gil	2023 Defense Future Challenge Conference (Private Event)
13:40-13:50	10	Coffee Break	
13:50-15:50	120	Session A-2 WITC 2023 Chair: Hwa-Young Jeong	
15:50-16:00	10	Coffee Break	
16:00-17:30	90	Session A-3 HCIS 2023 Winter Workshop & RBW Workshop Chair: Hyuk Jun Kwon	
17:30-18:00	30	Break	
18:00-20:00	120	Banquet (Only for Invited Members)	

Day 2, February 21, 2023			
Time	Min	HALL A	HALL B
10:00-12:00	120	Korea-China Joint Workshop (KCJW) (Chair: Ji Su Park)	2023 Defense Future Challenge Conference (Private Event)
12:00-13:30	90	Lunch	
13:30-15:30	120	Organizing Committee Meeting I	2023 Defense Future Challenge Conference (Private Event)
15:30-16:00	30	Break	
16:00-18:00	120	Executive Meeting – Organized by World IT Congress 2023	

Day 3, February 22, 2023		
Time	Min	HALL A
09:00-10:20	80	Local Arrangement Committee Meeting
10:20-10:40	20	Break
10:40-12:00	80	Organizing Committee Meeting II

1. A paper presentation should be made by one of authors of the paper for A paper presentation should be made by one of authors of the paper for 20 minutes (15 minutes for the presentation itself and 5 minutes for Q/A).
2. All speakers of each session should meet the session chair at their room 10 minutes before the session begins.
3. Windows 7 laptops running the Adobe Reader and Microsoft Office for paper presentations will be prepared. Please prepare for your presentation.
4. All online sections are played on Zoom with recorded video only.
5. For Q&A in the online section, please email the author.

**DETAILED SCHEDULE FOR
THE 2023 WORLD CONGRESS ON
INFORMATION TECHNOLOGY, APPLICATIONS
AND SERVICES
(WORLD IT CONGRESS 2023)**

Day 1, Feb. 20, 2023 (Monday)

09:30-10:00 Registration

**10:00-12:00 Session A-1 WITC 2023
(HALL A)
(Chair: Yan Li)**

- 1. A Distributed Calculation Method for Road Pricing Based on Demand Distribution**
Koki Murata, Tomoya Kawakami
- 2. A Data Distribution Method Using Inter-Vehicle Communication Based on Scheduled Routes**
Yuta Tanaka, Tomoya Kawakami
- 3. Current Music Royalties Distribution Structure Analysis in Korea and Efficient Settlement Distribution Structure Proposal**
Youngmin Kim, Dong Hwan Kim, Sunho Park, YongHwa Kim, Jisoo Hong, Sunghee Hong, Jinsoo Jeong, Byounghyo Lee
- 4. Omnidirectional Scattering Analysis of Microscale Bio-samples: The Case of Plasmodium falciparum-infected Red Blood Cells**
Seung Kyu Kang, Kyoohyun Kim, Jinsoo Jeong, Sunghee Hong, Byoung Soo Koh, Youngkeun Park, Jonghwa Shin
- 5. Development of Proactive Quality Management System for Small Business**
Suyeon Kim, Ilkyu Lee, Wonyong Choi, Donghae Ye
- 6. Knowledge Graph-based Digital Twin Data Management using Digital Twin Web**
Kyounghyun Park, Youngjae Lim, Daesub Yoon, Yangkoo Lee
- 7. Design of Integrated Housing Information Service Architecture with Blockchain**
Jaekyung Nam, Min Choi

12:00-13:00 Lunch

**13:00-13:40 Keynote Speech
(Chair: Joon-min Gil)**

Byeong-Seok Shin
“Virtual Reality for Metaverse Applications”
Professor Inha University, Korea
Director of MEDIAAI Lab..



13:40-13:50 Coffee Break

13:50-15:50 Session A-2 WITC 2023
(HALL A)
(Chair: Hwa-Young Jeong)

- 1. Learner's Preference Analysis using Big Data**
Hwa-Young Jeong
- 2. Destruction of elastic objects with position-based dynamics**
Su Kyung Sung, Sang Won Han, Byeong Seok Shin
- 3. Personalized Transfer Learning-Based POI Recommendation System with Spatio-Temporal Multi-head Attention**
Sony Peng, Yixuan Yang, Sophort Siet, Sadriddinov Ilkhomjon Rovshan Ugli, Dae-Young Kim, Doo-Soon Park
- 4. Unified Content-Based and Context-Aware Recommendation System: A case study of Movielens**
Sophort Siet, Sony Peng, Yixuan Yang, Sadriddinov Ilkhomjon Rovshan Ugli, Mi-Sun Kang, Doo-Soon Park
- 5. Blockchain-driven Physical Unclonable Devices using Chaotic Circuits for IoT Security in Smart City**
Abir El Azzaoui, Jong Hyuk Park
- 6. An Edge-Intelligence Framework Using Digital Twin for a Sustainable Green IoV System**
Hee Ji Park, Jung Ho Kang, Jong Hyuk Park
- 7. Quantum Technology for Ecologically Responsible Business Growth: Difficulties and Solutions**
Ji Min Ha, Jong Hyuk Park

15:50-16:00 Coffee Break

16:00-17:30 Session A-3 HCIS 2023 Winter Workshop & RBWW
(HALL A)
(Chair: Hyuk Jun Kwon)

- 1. Implementation of 360 VR-based tour content for non-face-to-face tourism**
Ye-Eun Jeong, Koojoo Kwon
- 2. The Role of Blockchain in the Web 3.0 Era**
Hyuk Jun Kwon
- 3. NFT of Digital Goods**
Hyuk Jun Kwon

17:30-18:00 Break

18:00-20:00 Banquet

Day 2, Feb. 21, 2023 (Tuesday)

10:00-12:00 Session A-4 KCJW
(Chair: Ji Su Park)

- 1. Secure Distributed Health Monitoring System Digital Twin for Metaverse Environment**
Xianjun Deng, Mikail Mohammed Salim, Jong Hyuk Park
- 2. A Cyberthreat Detection System-based on Digital Twins for Secure Smart City Networks**
Shailendra Rathore, Mikail Mohammed Salim, Ji Su Park
- 3. Convergence of Blockchain and Federated learning for Privacy Preserving in Metaverse Environment**
Laurence T. Yang, Abir EL Azzaoui, Jong Hyuk Park
- 4. A Laser-based Secure Quantum Communication using Blockchain for IIoT Privacy Preserving**
Oscar Llerena C. Enrique, Jung Ho Kang
- 5. Quantum Computing Technologies for Smart Cities: A Comprehensive Approach**
Neil Yen, Haotian Chan, Jong Hyuk Park
- 6. A Stochastic computation offloading Approach using Deep reinforcement learning for Digital Twins**
Sharma Pradip, Sekione Reward Jeremiah
- 7. A Study on Network Security in IoT Infrastructure: A Review**
Xiajun Deng, Yotxay Sangthong, Sushil Kumar Signhs

12:00-13:30 Lunch

13:30-15:30 Organizing Committee Meeting I

15:30-16:00 Break

16:00-18:00 Executive Meeting – Organized by World IT Congress 2023

Day 3, Feb. 22, 2023 (Wednesday)

09:00-10:20 Local Arrangement Committee Meeting

10:20-10:40 Break

10:40-12:00 Organizing Committee Meeting II

2023 Defense Future Challenge Conference

(2023년 국방미래도전 컨퍼런스)

- 공지사항 : 비공개 행사로 사전 허가자만 참석 가능 -
(문의 및 참가신청 : 동국대 박진호 교수 gomalove@daum.net)

급변하고 있는 안보상황과 더불어 미래전 양상과 패러다임의 전환을 주도하고 있는 ICT와 관련 스마트국방을 구현하기 위한 발전방안과 현재 추진하고 있는 미래도전 기술개발 연구 관련 최적방안 도출을 마련하기 위한 컨퍼런스

□ 행사 계획

- 행사명 : 2023 Defense Future Challenge Conference
- 일시 : '2023. 2. 20(월) ~ 21(화)
- 장소 : 제주시 소재 메종 글레드호텔
- 주최 : 한국정보처리학회, 국방과학연구소, 국방신문 / 방산리더스포럼
- 주관 : 동국대학교 국방안전연구센터
- 참석자 : 산·학·연 관계자 40여명
 - 국방과학연구소 : 김경신 박사 외 4명
 - (1분할) 엠진 유선모 소장 외 6명
 - (2분할) 세종대학교 강지원 교수 외 6명
 - (3분할) 동국대학교 박진호 교수 외 6명
 - 한국정보처리학회 : 박종혁 교수(서울과기대), 강정호 교수(배화여대) 외 9명
 - 국방신문 / 방산리더스포럼 : 송계신 대표, 문제웅 논설실장
 - 기업 : 이영준 소장(와이즈스톤) 외 4명
- 전문가 초빙 강연(특강) : 4명
 - 이영준 연구소장(TeCel ICT시험인증연구소) : 사이버 무력화기술 시험 및 평가 방안
 - 박두순 교수(순천향대학교) : 인공지능과 사이버 보안의 중요성
 - 김병욱 교수(동신대학교) : 국내외 국방분야 드론에서의 AI 활용 현황
 - 송계신 대표/회장(국방신문/방산리더스포럼) : 세계 전쟁과 국방미래도전 기술의 중요성



○ 구성

구 분	내 용	비 고
1일차 (2.20)	등록/개회, 미래도전 연동협의체 전시 및 발표, 전문가 강연1/2, 종합토의1	비공개
2일차 (2.21)	미래도전 기술개발 토의, 전문가 강연3/4, 시뮬레이터/데이터연동 시연, 종합토의2	비공개

○ 주제

- 스마트국방 구현을 위한 ICT 적용 및 발전방안
- 국방분야 미래도전 기술개발 연구 발전방안
- 사이버 무력화 기술 및 시연방안
- 미래도전기술 테스트 및 검증방안 등

○ 내용

- 최근 미래전 관련 기술동향 및 스마트국방 관련 추진현황
- 최근 사이버전 사례 및 양상, 국내외 사이버위협 동향
- 최근 개발된 사이버 및 무력화 기술 발표와 시연
- 최근 개발된 사이버 및 무력화 기술 테스트와 검증 방법 등

○ 발표자료 준비

- 발표자료 파워포인트로 작성, 1시간(특강자) 분량 준비
- 발표자료 2.13(월) 한 제출 (이메일: 동국대 박진호 교수, gomalove@daum.net)

○ 행사진행

- 발표자료 및 토의내용 등 고려 참석 허가자 외 비공개로 진행
- 코로나19 방역지침 준수 하 참석자 좌석 지정
- 휴식간 행사장소 환기, 마스크 착용 하 컨퍼런스 진행, 방역물품 비치

□ 세부일정

○ 1일차 (2.20.월)

시 간	프 로 그 램	비 고
10:00 ~ 10:30	등록 및 정리	사회자
10:30 ~ 12:00	연동협의체 전시 및 발표	최병훈 교수(동국대)
12:00 ~ 13:00	점심식사 및 네트워킹	
13:00 ~ 13:10	개회선언 및 개회사 (ADD 김경신PM)	사회자
13:10 ~ 13:40	축사 (한국정보처리학회 회장, 국방신문 대표 등)	사회자 + 사진촬영
13:40 ~ 14:30	전문가 초빙 강연#1. 사이버 무력화기술 시험 및 평가 방안	이명준 소장(와이즈스톤)
14:30 ~ 15:00	휴식 및 네트워킹(Coffee Break)	
15:00 ~ 15:50	전문가 초빙 강연#2. 인공지능과 사이버 보안의 중요성	박두순 교수(순천향대)
15:50 ~ 17:20	연동협의체 연구내용 발표 및 시연	최병훈 교수(동국대)
17:20 ~ 18:00	종합 토의1	사회자
18:00 ~	저녁식사 및 네트워킹	

○ 2일차 (2.21.화)

시 간	프 로 그 램	비 고
08:00 ~ 09:30	아침식사 및 네트워킹	
09:30 ~ 10:20	전문가 초빙 강연#3. 국내외 국방분야 드론에서의 AI 활용 현황	김병욱 교수(동신대)
10:20 ~ 11:10	분할과제별 연차평가 결과 및 액션 아이템 발표#1	유선모 소장(엠젠)
11:10 ~ 12:00	분할과제별 연차평가 결과 및 액션 아이템 발표#2	강지원 교수(세종대)
12:00 ~ 13:00	점심식사 및 네트워킹	
13:00 ~ 13:50	분할과제별 연차평가 결과 및 액션 아이템 발표#3	박진호 교수(동국대)
13:50 ~ 14:40	전문가 초빙 강연#4. 세계 전쟁과 국방미래도전 기술의 중요성	송계신 대표(국방신문)
14:40 ~ 15:00	휴식 및 네트워킹(Coffee Break)	
15:00 ~ 15:50	사이버 시뮬레이터 시연	연동협의체
15:50 ~ 16:40	데이터 연동 시연	연동협의체
16:40 ~ 17:30	종합 토의2	사회자
17:30 ~	폐회	



주최 : 한국정보처리학회 블록체인 기술 및 응용 연구회
주관 : 한국정보처리학회 컴퓨터소프트웨어연구회

2023. 02.20^{MON}
메종글래드 제주 호텔

프로그램 2023년 02월 20(월) 16:00 ~ 18:00

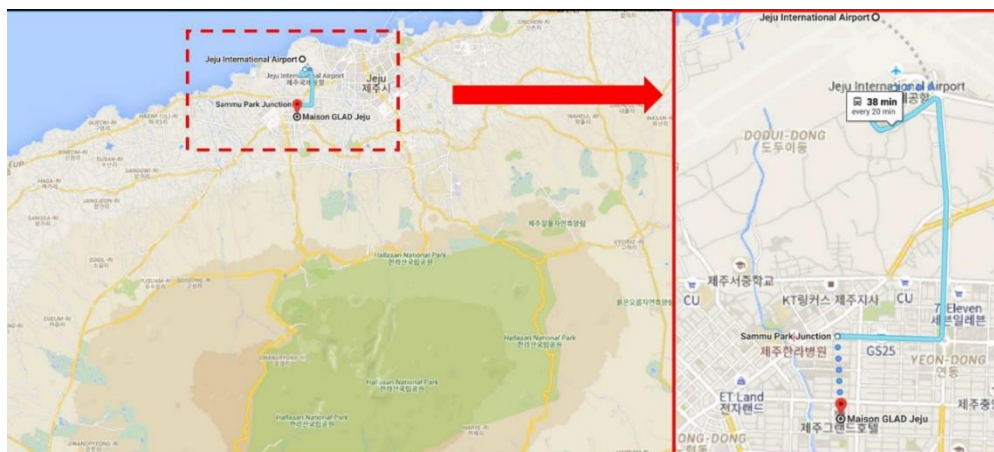
Session 1	16:00 ~ 16:50	Web3.0시대의 Blockchain의 역할
	16:50 ~ 17:00	휴식
Session 2	17:00 ~ 17:50	디지털 상품의 NFT화

Conference Venue



MAISON GLAD JEJU

- MAISONGLAD JEJU Hotel
 - 80, Noyeon-ro, Jeju-si, Jeju-do, Korea
 - Front dest TEL +82-64-717-5000 / FAX +82-64-742-3150
 - Reservation TEL +82-64-747-5000 / FAX +82642-742-3150
- Web: <https://maisongladjju-hotels.com/en/web/maison>



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