The 6th International Conference on Big data, IoT, and Cloud Computing (BIC 2022)

August 16-18, 2022
Jeju, Korea

Organized by

KIPS CSWRG of Korea

Conferences

The 14th International Conference on Computer Science and its Applications (CSA 2022)
- Dec 19-21, 2022, Vientiane, Laos
- http://csa-conference.org/2022

The 16th KIPS International Conference on Ubiquitous Information Technologies and Applications (CUTE 2022)
- Dec 19-21, 2022, Vientiane, Laos
- http://cute-conference.org/2022

Message from the BIC 2022 General Chair

The 2022 International Conference on Big data, IoT, and Cloud Computing will be held in Jeju, Korea, August 16-18, 2022. The BIC 2022 is the newly renamed conference from highly successful series of the International Conference on Ubiquitous Computing Application and Wireless Sensor Network (UCAWSN) - 4th UCAWSN (July, 2016), 3rd UCAWSN (July, 2015), 2nd UCAWSN (July, 2014), and 1st UCAWSN (July, 2013) since 2013. The BIC 2022 will be the most comprehensive conference focused on Big data, IoT, and Cloud Computing (BIC). The BIC 2022 will provide an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of BIC such as model, algorithms, applications, services, performance and reliability for Big data, IoT, Cloud Computing. Also, the conference will publish high-quality papers which are closely related to the various theories and practical applications in Big data, IoT, and Cloud computing. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in those important subjects. Accepted and presented papers highlight new trends and challenges of Computer Science and its Applications. The presenters showed 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 Doo-soon Park (SoonChunHyang University, Korea), James J. (Jong Hyuk) Park (SeoulTech, Korea), and Young-Sik Jeong (Dongguk University, Korea). 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.

BIC 2022 General Chair

Jungho Kang, Baewha Women's University, Korea
Han-Chieh Chao, National Ilan University, Taiwan
Qun Jin, Waseda University, Japan
Yi Pan, Georgia State University, USA

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Message from the BIC 2022 Program Chairs

Welcome to the BIC 2022 which will be held in Jeju, Korea on August 16~18, 2022. The BIC 2022 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 the conference and its publications will be a trigger for further related research and technology improvements in this important subject. The BIC 2022 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 an International Conference, 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 Doo-soon Park (SoonChunHyang University, Korea), James J. (Jong Hyuk) Park (SeoulTech, Korea), Young-Sik Jeong (Dongguk University, Korea) as the Steering Chairs of BIC for their strong encouragement and guidance to organize the conference. We would like to thank BIC 2022 General Chairs for their advices to make possible organization of The BIC 2022. We would like to express special thanks to execute members for their timely unlimited support

BIC 2022 Program Chairs

Ji Su Park, Jeonju University, Korea
Arun Kumar Sangaiah, VIT University, India
Jin Wang, Yangzhou University, China

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Local Arrangement Chairs
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Min Choi, Chungbuk National University, Korea

Invited Speaker

Cybersecurity in V2X Communications

Pradip Kumar Sharma

Assistant Professor of Cybersecurity,

Department of Computing Science, University of Aberdeen, Aberdeen, UK

Abstract

Advances in cellular technology are a key driver of the growing automotive Vehicle to Everything (V2X) market. In V2X communications, information from sensors and other sources travels via high-bandwidth, low-latency, high-reliability links, paving the way to fully autonomous driving and intelligent mobility. With the future adoption of 5G and beyond (5G&B) networks, V2X is likely to generate a huge volume of data, which encourages the use of edge computing and pushes the system to learn the model locally to support real-time applications. However, the edge computing paradigm raises concerns about the security and privacy of local nodes (e.g., vehicles) and the increased risk of cyberattacks. In this talk, we will discuss open research questions, key requirements, and potential solutions to provide cyber resilience in V2X communications.

Biography:

He is an Assistant Professor in Cybersecurity in the Department of Computing Science at the University of Aberdeen, UK. He received his Ph.D. in CSE from the Seoul National University of Science and Technology, South Korea. He was a Software Engineer at MAQ Software, India, and involved on variety of projects, proficient in building largescale complex data warehouses, OLAP models, and reporting solutions that meet business objectives and align IT with business.

He has published many technical research papers in leading journals from IEEE, Elsevier, Springer, MDPI, etc. Some of his research findings are published in the most cited journals. He has been an expert reviewer for IEEE Transactions, Elsevier, Springer, and MDPI journals and magazines. He received a top 1% reviewer in computer science by Publons Peer Review Awards 2018 and 2019, Clarivate Analytics. He has also been invited to serve as chair and program committee member in several reputed international conferences such as ACM ICDNC 20201, IEEE CCNC 2021, CSA 2020, HCIS 2020, IEEE ICC2019, IEEE MENACOMM'19, 3ICT 2019, etc.

PROGRAM SCHEDULE FOR BIC 2022

Day 1, August 16, 2022		
Time	**Min**	**HALL A**
09:00-11:30	150	**Organizing Committee Meeting**
11:30-13:00	90	**Lunch**
13:00-15:30	150	**Local Arrangement Committee Meeting**

Day 2, August 17, 2022		
Time	**Min**	**HALL A**
08:40-09:00	20	**Registration**
09:00-10:30	90	**Session A-1** **Chair: Jaesoo Kim**
10:30-10:40	10	**Coffee Break**
10:40-12:10	90	**Session A-2** **Chair: Yan Li**
12:10-13:40	90	**Lunch**
13:40-14:20	40	**(Video) Keynote Speech: Pradip Kumar Sharma** **"Cybersecurity in V2X Communications"** **Chair: Joon-Min Gil**
14:20-14:30	10	**Coffee Break**
14:30-16:00	90	**Session A-3** **Chair: Yoojae Won**

16:00-16:10	10	Coffee Break
16:10-17:40	90	**Session A-4** (HCIS 2022 Summer Workshop & BIC 2022) Chair: JongBeom Lim
17:40-18:00	20	**Break**

Day 3, August 18, 2022		
Time	**Min**	**HALL A**
10:00-12:00	120	**Online Session** Chair: Byeong-Seok Shin
12:00-13:00	60	**Lunch**
13:00-15:00	120	**Organizing Committee Meeting**

1. **A paper presentation should be made by one of authors of the paper for 15 minutes (10 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 10 laptops running the Adobe Reader and Microsoft Office for paper presentations will be prepared. Please prepare for your presentation.**

* DO NOT PROVIDE ALL MEALS, ONLY WATER & COFFEE *

DETAILED SCHEDULE FOR

THE 5TH INTERNATIONAL CONFERENCE ON BIG DATA, IOT, AND CLOUD COMPUTING (BIC 2022)

Day 1, August 16, 2022(Tuesday)

09:00-11:30   **Organizing Committee Meeting**

11:30-13:00   **Lunch**

13:00-15:00   **Local Arrangement Committee Meeting**

Day 2, August 17, 2022 (Wednesday)

08: 40-09: 00   **Registration**

09: 00-10: 30   **Session A-1 : BIC 2022**
(HALL A)
(Chair : Jaesoo Kim)

1. **Optimal Scenario Scheduling for Efficient Resource Utilization on Cloud Computing**
   Sihyun Park, Byeonghui Jeong, Jueun Jeon, Young-Sik Jeong

2. **Data-level Approximate Computing for Efficient AI Distributed Training in Solar-powered Edge AIoT Environment**
   Yeontae Yoo, Minjae Kang, Seungwoo Lee, Yujin Gong, Dong Kun Noh

3. **Analysis of Accurate Fire Accident Identification Criteria based on YOLOv5**
   Ji Hwan Choe, Min Jung Jeon, Youn Soon Shin

4. **A Short Survey of Taxonomic-Independent Binning Approaches in Metagenomics**
   Weibin Ren, Junaid Khan, Kyungsup Kim

5. **A study on adaptive learning method applying advanced DKT to improve learning effect on intelligent edutech platform**
   Se-Yun Lee, A-Young Son

6. **Analysis on Essential Elements in Deep Learning for HMDs Supporting Soldiers**
   Seok Min Hong, Seung-Ryeol Ohk, Young-Jin Kim

10: 30-10: 40   **Coffee Break**

10: 40-12: 10   **Session A-2 : BIC 2022**
(HALL A)
(Chair :   Yan Li)

1. **A Study on personalized curriculum based on data vectorization and contents recommendation for learning effect**
   Se-Yun Lee, A-Young Son

2. **A Scalable Blockchain Framework for Medical Data Services**
   Jeonghun Cha, Yerin Yu, Yun Young Hwang, Jeong Sang Choi

3. **A Study on the Operational Efficiency through Resource Prediction of EWS in Industrial Control System**
   Woo Hyun Choi, Chul Ho Kim

4. **Co-Occurrence Analysis of Food Consumption and Non-Communicable Diseases in People: A Meta-Analysis**
   Flor Gutierrez De la Cruz, Donghwa Yoon, Paul Curtis Bye, Mincheol Kim, Jinhyun Ahn

5. **A Team Composition Strategy for Absolute-Fairness Working Group based on Attribute Social Network**
   Yixuan Yang, Sony Peng, Doo-Soon Park

6. **Reliable Recommendation systems based on Collaborative filtering and User Trust Connection**
   Sony Peng, Yixuan Yang, Doo-Soon Park

12: 10-13: 40   **Lunch**

13: 40-14: 20   **Keynote Speech**

Keynote Speech: Pradip Kumar Sharma
"Cybersecurity in V2X Communications"
(Chair: Joon-Min Gil)

14: 20-14: 30   **Coffee Break**

14: 30-16: 00   <u>Session A-3 : BIC 2022</u>
(HALL A)
(Chair :   Yoojae Won)

1. **Smart Healthcare Framework using FCM Notification**
   Jaekyung Nam, Min Choi

2. **Design of smart contract on blockchain for contract rescission**
   Kijung Lee, Jaekyung Nam, Min Choi

3. **Edge Cloud platform for Smart Farm**
   Seongjun Kim, Jaekyung Nam, Min Choi

4. **Encrypted Network Traffic Fingerprinting Technique Using TLS Handshake Message**
   Sunghyun Yu, Yoojae Won

5. **Process Identification Using a Comparison of Cipher Suites and Extension Fields Similarity in TLS Packets**
   Hwijoon Jeong, Yoojae Won

6. **Implementation of Docker-based SQL injection attack training system**
   Hyeoncheol Jeon, Seungmin Lee, Yoojae Won

16: 00-16: 10   <u>Coffee Break</u>

16: 10-17: 40   <u>Session A-4 : HCIS 2022 Summer Workshop & BIC 2022</u>
(HALL A)
(Chair :   JongBeom Lim)

1. **Versatile Cloud Resource Scheduling Based on Artificial Intelligence in Cloud-enabled Fog Computing Environments**
   JongBeom Lim

2. **MBTI Personality Type Prediction Model Using CNN Ensemble-Based WZT Analysis**
   Kyung-yeul Kim, Young-bo Yang, Mi-ra Kim, Ji Su Park, Jihie Kim

3. **Edge Computing-based Guard System Using LiDAR and RADAR sensors**
   Eun-Seok Lee, Yun-Im Lee, Young-Cheol Kim, Eun-Kyung Jo, Byeong-Seok Shin

4. **The Study of Blockchain based Protection Method for Federated Learning**
   Yan Li, Byeong-Seok Shin

5. **Development of a Multiple-Choice Question Scoring Application based on PDF Files**
   Jung Suk Hyun, Chan Jung Park

Day 3, August 18, 2022 (Thursday)

10:00-12:00   Online Session: BIC 2022
(Chair : Byeong-Seok Shin)

1. **A Deep Reinforcement Learning Architecture for Scalable Optimization of Throughput and Energy Consumption in UAV-Enabled MEC Systems**
    Sekione Reward Jeremiah, Jong Hyuk Park

2. **An Optimized Low-Carbon IoV-based Wireless Charging System using Digital Twin in Smart City Environment**
    Abir EL Azzaoui, Jong Hyuk Park

3. **BDT: Blockchain and Digital Twins-based Secure Framework for Efficient Data Processing in Smart Manufacturing**
    Haotian Chen, Jong Hyuk Park

4. **A Study on Research Paper Classification Scheme based on BERT**
    Joon-Min Gil , Jihun Kang

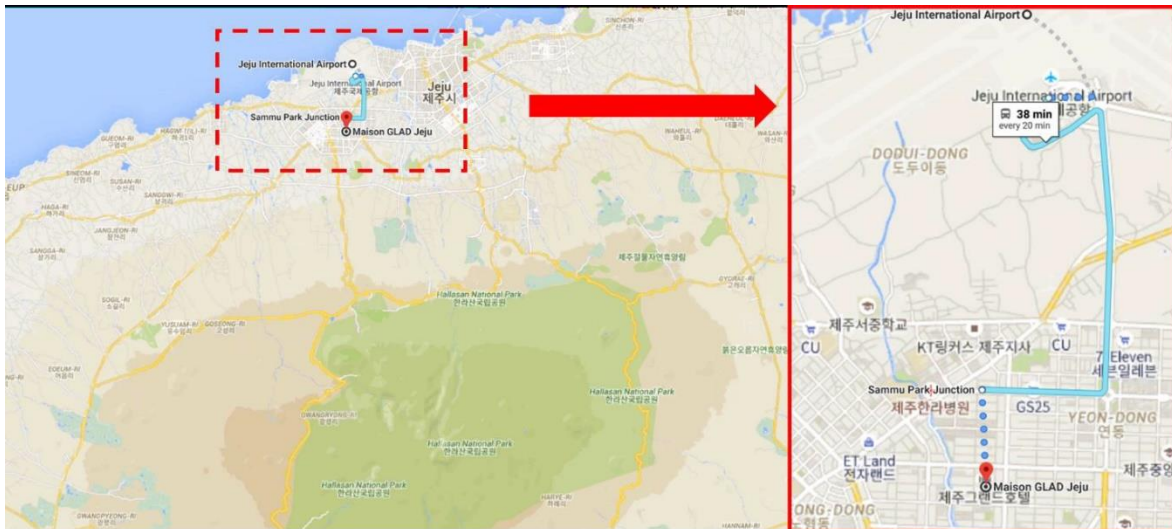**12:00-13:00   Lunch**

13:00-15:00   Executive Meeting – Organized by BIC 2022

Conference Venue

MAISON GLAD JEJU

- MAISONGLAD JEJU Hotel
- 80, Noyeon-ro, Jeju-si, Jeju-do, Korea
- Hotel TEL +82-64-747-5000 / FAX +82-64-742-3150
- Web : https://maisongladjeju-hotels.com/en/web/maison-en

Useful Links

Official Travel Information

- Official Korea Tourism Organization (http://english.visitkorea.or.kr/enu/index.kto)
- Jeju Tour Info (http://www.ijto.or.kr/)