

The 2017 Global Conference on Information Technology, Computing, and Applications (GlobalIT 2017)

January 9 - 11, 2017

Clark, Philippines

Organized by

KIPS-CSWRG



2017 International Conferences

**The 2017 World Congress on Information Technology Applications and Services
(WITC 2017)**

- February, 14-16, 2017, Jeju, Korea
- <http://www.worlditcongress.org/2017>

**The 11th International Conference on Multimedia and Ubiquitous Engineering
(MUE 2017)**

- May, 17-19, 2017, Danang, Vietnam
- <http://www.mue-conference.org/2017>

**The 12th International Conference on Future Information Technology
(FutureTech 2017)**

- May, 17-19, 2017, Danang, Vietnam
- <http://www.futuretech-conference.org/2017>

**The 9th International Conference on Computer Science and its Applications
(CSA 2017)**

- December, 18-20, 2017, Taichung, Taiwan
- <http://www.csa-conference.org/2017>

**The 12th KIPS International Conference on Ubiquitous Information Technologies and Applications
(CUTE 2017)**

- December, 18-20, 2017, Taichung, Taiwan
- <http://www.cute-conference.org/2017>

Message from the GlobalIT 2017 General Chairs

The 2017 Global Conference on Information Technology, Computing, and Applications (GlobalIT 2017) will be held in Clark, Philippines, January 9~11, 2017. GlobalIT 2017 will be the most comprehensive conference focused on Information Technology, computing, and applications. GlobalIT 2017 will provide an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of advanced IT such as Ubiquitous computing, Wireless sensor network/RFID, Pervasive platform and middleware, Mobile multicasting, Wireless communication technology, Security and trust Computing, Future internet, Internet of Things, Cloud computing, Big data, Intelligence and Neuro computing, etc.

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.

The papers included in the proceedings cover the following topics: Mobile and ubiquitous computing, Dependable, reliable and autonomic computing, Security and trust management, Multimedia systems and services, Networking and communications, Database and data mining, Game and software engineering, Grid and scalable computing, Embedded system and software, Artificial intelligence, Distributed and parallel algorithms, Web and internet computing and IT policy and business management.

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 Honorary Chair, Doo-Soon Park (Soon Chun Hyang University, Korea). Our special thanks go to the Program Chairs: Yu Chen (State University of New York - Binghamton, USA), Jason C. Hung (Oversea Chinese University, Taiwan), and Marek R. Ogiela (AGH University of Science and Technology, Poland), 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.

Global IT 2017 General Chairs

Hamid R. Arabnia, The University of Georgia, USA
Gangman Yi, Dongguk University, Korea

Message from the Global IT 2017 Program Chairs

Welcome to the 2017 Global Conference on Information Technology, Computing, and Applications (GlobalIT 2017) which will be held in Clark, Philippines, January 9~11, 2017. GlobalIT 2017 will be the most comprehensive conference focused on the various aspects of advances in Information Technology, computing, and applications.

GlobalIT 2017 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. GlobalIT 2017 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 (Soon Chun Hyang University, Korea), the Honorary Chair of GlobalIT 2017 for his strong encouragement and guidance to organize the conference. We would like to thank GlobalIT 2017 General Chairs, Hamid R. Arabnia (The University of Georgia, USA), and Gangman Yi (Dongguk University, Korea) for their advices to make possible organization of GlobalIT 2017. We would like to express special thanks to execute members for their timely unlimited support.

GlobalIT 2017 Program Chairs

Yu Chen, State University of New York - Binghamton, USA
Jason C. Hung, Oversea Chinese University, Taiwan
Marek R. Ogiela, AGH University of Science and Technology, Poland

Organization

Honorary Chair

Doo-Soon Park, Soon Chun Hyang University, Korea

General Chairs

Hamid R. Arabnia, The University of Georgia, USA
Gangman Yi, Dongguk University, Korea

Program Chairs

Yu Chen, State University of New York - Binghamton, USA
Jason C. Hung, Oversea Chinese University, Taiwan
Marek R. Ogiela, AGH University of Science and Technology, Poland

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Ford LumbanGaol, Bina Nusantara University, Indonesia

Jiankun Hu, RMIT University, Australia



Invited Speaker



Blockchain Technologies and Services: Challenges, Security, and Solutions

Prof. James (Jong Hyuk) Park

Department of Computer Science and Engineering,
Seoul National University of Science and Technology (SeoulTech),
South Korea

Abstract

Blockchain has recently drawn much attention from interested stakeholders in a wide range of industries. The purpose behind this explosion of interest is that with the blockchain, we can operate the applications in distributed manners that could previously run through a trusted intermediary. The blockchain offers a distributed peer-to-peer network where without a trusted intermediary, untrusted individuals can interact in a verifiable manner with each other. In this talk, I will give a review of different various technologies and services based on case studies. In particular, I will point out the shortcomings and challenges of current blockchain technologies and services, and propose potential solutions considering enhanced security issues. Finally, a preliminary new service model – a blockchain based vehicle network architecture will be introduced in this talk.

Biography

Dr. James J. (Jong Hyuk) Park received Ph.D. degrees in Graduate School of Information Security from Korea University, Korea and Graduate School of Human Sciences from Waseda University, Japan. From December, 2002 to July, 2007, Dr. Park had been a research scientist of R&D Institute, Hanwha S&C Co., Ltd., Korea. From September, 2007 to August, 2009, He had been a professor at the Department of Computer Science and Engineering, Kyungnam University, Korea. He is now a professor at the Department of Computer Science and Engineering and Department of Interdisciplinary Bio IT Materials, Seoul National University of Science and Technology (SeoulTech), Korea. Dr. Park has published about 200 research papers in international journals and conferences. He has been serving as chairs, program committee, or organizing committee chair for many international conferences and workshops. He is a founding steering chair of some international conferences – MUE, FutureTech, CSA, UCAWSN, etc. He is editor-in-chief of Human-centric Computing and Information Sciences(HCIS) by Springer, International Journal of Information Technology, Communications and Convergence (IJITCC) by InderScience, and Journal of Convergence (JoC) by KIPS CSWRG. He is Associate Editor / Editor of 14 international journals including 8 journals indexed by SCI(E). In addition, he has been serving as a Guest Editor for international journals by some publishers: Springer, Elsevier, John Wiley, Oxford Univ. press, Hindawi, Emerald, InderScience. His research interests include security and digital forensics, Human-centric ubiquitous computing, context awareness, multimedia services, etc. He got the best paper awards from ISA-08 and ITCS-11 conferences and the outstanding leadership awards from IEEE HPCC-09, ICA3PP-10, IEE ISPA-11, and PDCAT-11. Furthermore, he got the outstanding research awards from the SeoulTech, 2014. Dr. Park's research interests include Human-centric Ubiquitous Computing, Vehicular Cloud Computing, Information Security, Digital Forensics, Secure Communications, Multimedia Computing, etc. He is a member of the IEEE, IEEE Computer Society, KIPS, and KMMS. Personal homepage - <http://www.parkjonghyuk.net>

PROGRAM SCHEDULE FOR GLOBAL IT 2017

Day 1, January 9, 2017		
Time	Min	HALL -A
08:40-09:00	20	Registration
09:00-10:30	90	Session 1 Chair: Kwangman Ko
10:30-10:40	10	Coffee Break
10:40-11:40	60	Session 2 Chair: Doo-Soon Park
11:40-12:30	50	Keynote Speech (Chair: Yunsick Sung)
12:30-13:30	60	Lunch
13:30-15:00	90	Session 3 Chair: Kwang-il Hwang
15:00-15:10	10	Coffee Break
15:10-17:50	160	Session 4 Chair: Yunsick Sung
18:00 -		Banquet (Hall B)

Day 2, January 10, 2017		
Time	Min	HALL -A
09:00-12:00	240	Local Arrangement Committee Meeting
13:00-15:00	120	Organizing Committee Meeting I
16:00-17:00	60	Executive Meeting I - Organized by Global IT 2017

[ONLY FOR INVITED MEMBERS]

Day 3, January 11, 2017		
Time	Min	HALL -A
09:00-12:00	240	Organizing Committee Meeting II
13:00-15:00	120	Executive Meeting II - Organized by Global IT 2017
16:00-17:00	60	Organizing Committee Meeting III

[ONLY FOR INVITED MEMBERS]

1. A paper presentation should be made by one of authors of the paper for 20 minute (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.

**DETAILED SCHEDULE FOR
THE 2017 GLOBAL CONFERENCE ON
INFORMATION TECHNOLOGY, COMPUTING,
AND APPLICATIONS (GLOBAL IT 2017)**

Day 1, January 9, 2017 (Monday)

08:40-09:00 Registration

**09:00-10:30 Session 1
(HALL A)
(Chair: Kwangman Ko)**

- 1. Online Cloud-Based Framework for Smartphone Battery Life Estimation**
Hayoon Yi, Yunheung Paek, Raja Wasim Ahmad, Abdullah Gani, Raja Sehrab Bashir, Siti Hafizah Ab Hamid, Kwangman Ko
- 2. Development of Smart Exercise Guide Information System for Rehabilitation Training Program**
Chang Won Jeong, Seang Lypengleang, Su Chong Joo
- 3. YANG-based data modeling techniques for the content layer of NETCONF to improve the query throughput**
YangMin Lee
- 4. Computational balancing of sequence alignments on cloud-based environments**
Jaehee Jung, Gangman Yi
- 5. Plagiarism Inspection System using Morpheme Analyzer**
Chae-reen Kim, JinSoo Park, Doo-soon Park
- 6. Design and Implementation of Private LPWA Gateway**
Kwang-il Hwang, Seung-Kyu Park, Hyo-seong Kim, Byoung-Sup Shim

10:30-10:40 Coffee break

**10:40-11:40 Session 2
(HALL A)
(Chair: Doo-Soon Park)**

- 1. Zooming Speed and Pattern for Zoomable User Interface**
Samuel Sangkon Lee
- 2. A Workload-aware Thread-mapping Scheme for Multi-core based Message Processors**
HeeEun Kang, Sung-ju Yoo, Sungyong Park
- 3. A User-level Thread Scheduling Strategy for Multi-core based Real-time Message Processors**
Sangho Wang, Young-Hun Park, Sungyong Park
- 4. Cross-Site Scripting Attack Detection in Social Network Service**

Shailendra Rathore, Young-sik Jeong, Doo-soon Park, Jong Hyuk Park

5. **Novel identification method for optimal parameters of splitting sequences**
Gangman Yi, Young-Sik Jeong
6. **An Empirical Study on IoT-Learning for Health-Care of Rheumatoid Arthritis Patients**
Jinho Park, Eunkyeong Jang

13:10-14:00 **Keynote Speech**
(HALL A)
(Chair: Yunsick Sung)

12:10-13:30 **Lunch**

13:30-15:00 **Session 3**
(HALL A)
(Chair: Kwang-il Hwang)

1. **Design Pattern-based Ground Control Station Architecture Design for Muple UAVs**
Jeonghoon Kwak, Yunsick Sung
2. **Mixed Interface for Virtual Unmanned Aerial Vehicles**
Yunsick Sung
3. **User Interface Design for IoT Device Control**
Gangman Yi
4. **Non-disruptive Resource Management for High-availability based on Cloud Computing**
Hyun-Woo Kim
5. **Multi-broker for Various Device Integration Control on IoT**
Boo-Kwang Park

15:00-15:10 **Coffee break**

15:10-17:50 **Session 4**
(HALL A)
(Chair: Yunsick Sung)

1. **A Computing Resource Scheduler for Continuous Task Processing in a Mobile Cloud Computing**
Boo-Kwang Park, Yoon-A Heo
2. **Deep Learning-based Security Method**
Yunsick Sung
3. **Automatic Classification Mechanism for Genome Analysis based on Cloud Computing with Big Data**
Seok-Hyeon Han, Gangman Yi
4. **Malicious Instruction Analysis Against APT of Sensor Communication on IoT Environment**
Hyun-Woo Kim, Jong Hyuk Park
5. **Automatic Resource Allocation for High-Availability of CaaS based on DRV**
Seok-Hyeon Han, HwiRim Byun

18:00 - Banquet [HALL-B]

Day 2, January 10, 2017 (Tuesday)

09:00-12:00 Local Arrangement Committee Meeting

13:00-15:00 Organizing Committee Meeting I

16:00-17:00 Executive Meeting I - Organized by Global IT 2017

Day 3, January 11, 2017 (Wednesday)

09:00-12:00 Organizing Committee Meeting II

13:00-15:00 Executive Meeting II - Organized by Global IT 2017

16:00-17:00 Organizing Committee Meeting III

Conference Venue



Widus (Clark, Philippines) Hotel

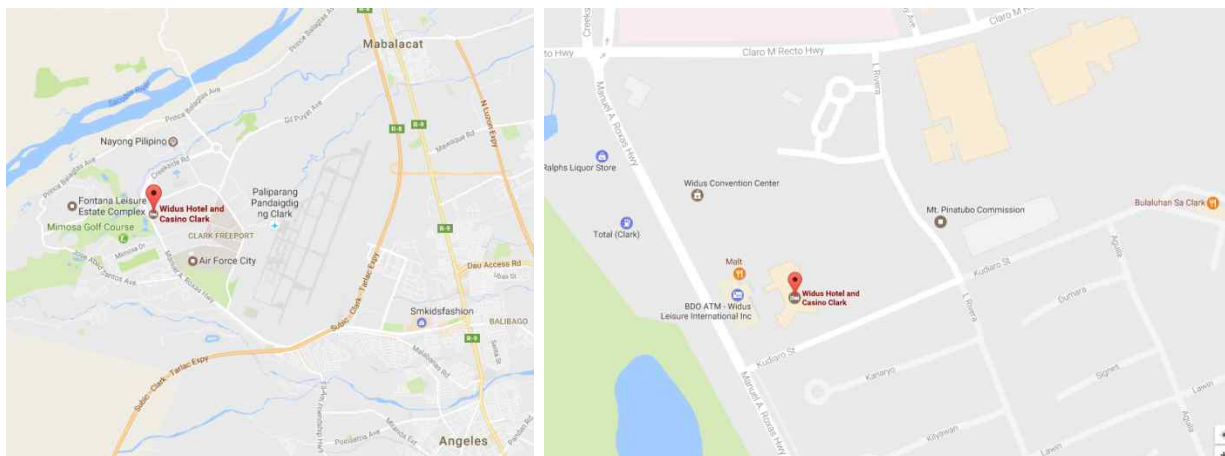
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Welcome to **Widus (Clark, Philippines) Hotel**, the one-stop premier leisure destination in Clark Freeport Zone, approximately 90 minutes' drive from Metro Manila and 7 minutes convenient drive from Clark International Airport. Accredited as a Deluxe Class Hotel by the Department of Tourism, Widus (Clark, Philippines) Hotel is one of the youngest and most luxurious properties in Clark to date. The prestigious property is ranked as the top hotel choice in Clark and is also a recipient of the 2015 Travelers' Choice Award by TripAdvisor. The same travel review website also acknowledged Widus as one of the best hotel for families in the Philippines, being consistently on its Top Ten list. Inspired by the modern Asian designs, the facade and interiors reveals an opulent & refreshing ambiance. Visually stunning and perfectly planned, the hotel capitalizes on its natural ventilation, space and picture-perfect scenery which can be enjoyed at any vantage point.