

**The 17th International Conference on
Future Information Technology
(FutureTech 2022)
&
The 16th International Conference on
Multimedia and Ubiquitous Engineering
(MUE 2022)**

April 21-23, 2022
Jeju, Korea

Organized by

FutureTech, MUE & KIPS CSWRG



2022 International Conferences
(Sponsored / Technically Sponsored by KIPS / KIPS CSWRG)

The 6th The International Conference on Big data, IoT, and Cloud Computing (BIC 2022)
- August 15-17, Jeju, Korea
- <http://bic-conference.org/2022>

Message from the FutureTech 2022 General Chairs

FutureTech 2022 is the 17th event of the series of international scientific conference. This conference takes place on April 21-23, 2022 in Jeju, Korea. The aim of the FutureTech 2022 is to provide an international forum for scientific research in the technologies and application of information technology. FutureTech 2022 is the next edition of FutureTech 2021(Jeju, Korea), FutureTech 2020(Jeju, Korea), FutureTech 2019(Xian, China), FutureTech 2018 (Salerno, Italy), FutureTech 2017 (Seoul, Korea), FutureTech 2016 (Beijing, China), FutureTech 2015 (Hanoi, Vietnam), FutureTech 2014 (Zhangjiajie, China), FutureTech 2013 (Gwangju, Korea), FutureTech 2012 (Vancouver, Canada), FutureTech 2011 (Loutraki, Greece), FutureTech 2010 (Busan, Korea, May 2010) which was the next event in a series of highly successful the International Symposium on Ubiquitous Applications & Security Services (UASS-09, USA, Jan. 2009), previously held as UASS-08 (Okinawa, Japan, Mar. 2008), UASS-07 (Kuala Lumpur, Malaysia, August, 2007), and UASS-06 (Glasgow, Scotland, UK, May, 2006).

The conference papers included in the proceedings cover the following topics: Hybrid Information Technology, High Performance Computing, Cloud and Cluster Computing, Ubiquitous Networks and Wireless Communications, Digital Convergence, Multimedia Convergence, Intelligent and Pervasive Applications, Security and Trust Computing, IT Management and Service, Bioinformatics and Bio-Inspired Computing, Database and Data Mining, Knowledge System and Intelligent Agent, Game and Graphics, and Human-centric Computing and Social Networks. Accepted and presented papers highlight new trends and challenges of future information technologies. We hope readers will find these results useful and inspiring for their future research.

We would like to express our sincere thanks to Steering Chair: James J. (Jong Hyuk) Park (SeoulTech, Korea) and Young-Sik Jeong (Dongguk University, Korea). Our special thanks go to the Program Chairs: Ji Su Park(Jeonju University, Korea), Yan Li(Inha University, Korea), , Ka Lok Man(Xi'an Jiaotong-Liverpool University, China), S. Vimal(National Engineering College, India), all Program Committee members, and all reviewers for their valuable efforts in the review process that 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.

FutureTech 2022 General Chairs

Jungho Kang, Baewha Women's University, Korea
Yi Pan, Georgia State University USA
Vincenzo Loia, University of Salerno, Italy

Message from the FutureTech 2022 Program Chairs

Welcome to the 17th International Conference on Future Information Technology (FutureTech 2022), which will be held in Jeju, Korea on April 21-23, 2021. FutureTech 2022 will be the most comprehensive conference focused on the various aspects of information technologies. It will provide an opportunity for academic and industry professionals to discuss recent progress in the area of future information technologies. In addition, the conference will publish high quality papers which are closely related to the various theories and practical applications in multimedia and ubiquitous engineering. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in these important subjects.

For FutureTech 2022, we received many paper submissions, after a rigorous peer review process, we accepted only articles with high quality for the FutureTech 2022 proceedings, published by the Springer. All submitted papers have undergone blind reviews by at least two reviewers from the technical program committee, which consists of leading researchers around the globe. Without their hard work, achieving such a high-quality proceeding would not have been possible. We take this opportunity to thank them for their great support and cooperation. Finally, we would like to thank all of you for your participation in our conference, and also thank all the authors, reviewers, and organizing committee members. Thank you and enjoy the conference!

FutureTech 2022 Program Chairs

Ji Su Park, Jeonju University, Korea

Yan Li, Inha University, Korea

Ka Lok Man, Xi'an Jiaotong-Liverpool University, China

S. Vimal, National Engineering College, India

Organization

Honorary Chair

Doo-soon Park, SoonChunHyang University, Korea

Steering Chairs

James J. Park, SeoulTech, Korea

Young-Sik Jeong, Dongguk University, Korea

General Chairs

Jungho Kang, Baewha Women's University, Korea

Yang Xiao, The University of Alabama, USA

Program Chairs

Ji Su Park, Jeonju University, Korea

Yan Li, Inha University, Korea

Ka Lok Man, Xi'an Jiaotong-Liverpool University, China

S. Vimal, National Engineering College, India

International Advisory Committee

Yi Pan, Georgia State University, USA

Victor Leung, University of British Columbia, Canada

Hsiao-Hwa Chen, National Cheng Kung University, Taiwan

Laurence T. Yang, St Francis Xavier University, Canada

C.S. Raghavendra, University of Southern California, USA

Philip S. Yu, University of Illinois at Chicago, USA

Hai Jin, Huazhong University of Science and Technology, China

Qun Jin, Waseda University, Japan

Arun Kumar Sangaiah, VIT University, India

Publicity Chairs

Jin Wang, Yangzhou University, China

Kwang-il Hwang, Incheon National University, Korea

Min Choi, Chungbuk National University, Korea

Hyuk Joon Kwon, Soonchunhyang University, Korea

Yeong-Seok Seo, Yeungnam University, Korea

Jinho Park, Dongguk University, Korea

Message from the MUE 2022 General Chairs

MUE 2022 is the 16th event of the series of international scientific conference. This conference takes place on April 21-23, 2022 in Jeju, Korea. The aim of the MUE 2022 is to provide an international forum for scientific research in the technologies and application of Multimedia and Ubiquitous Engineering. Ever since its inception, International Conference on Multimedia and Ubiquitous Engineering has been successfully held as MUE 2021(Jeju, Korea), MUE 2020(Jeju, Korea), MUE 2019(Xian, China), MUE 2018 (Salerno, Italy), MUE 2017 (Seoul, Korea), MUE 2016 (Beijing, China), MUE 2015 (Hanoi, Vietnam), MUE 2014 (Zhangjiajie, China), MUE 2013 (Seoul, Korea), MUE 2012 (Madrid, Spain), MUE 2011 (Loutraki, Greece), MUE 2010 (Cebu, Philippines), MUE 2009 (Qingdao, China), MUE 2008 (Busan, Korea), and MUE 2007 (Seoul, Korea).

The conference papers included in the proceedings cover the following topics: Multimedia Modeling and Processing, Multimedia and Digital Convergence, Ubiquitous and Pervasive Computing, Ubiquitous Networks and Mobile Communications, Ubiquitous Networks and Mobile Communications, Intelligent Computing, Multimedia and Ubiquitous Computing Security, Multimedia and Ubiquitous Services, Multimedia Entertainment. Accepted and presented papers highlight new trends and challenges of Multimedia and Ubiquitous Engineering. We hope readers will find these results useful and inspiring for their future research.

We would like to express our sincere thanks to Steering Chair: James J. (Jong Hyuk) Park (SeoulTech, Korea). Our special thanks go to the Program Chairs: Ji Su Park (Jeonju University, Korea), Fei Hao (Xi'an Normal University, China), Alireza Souri(Islamic Azad University, Iran), Sherali Zeadally(University of Kentucky, USA), all Program Committee members and all reviewers for their valuable efforts in the review process that helped us to guarantee the highest quality of the selected papers for the conference.

MUE 2022 General Chairs

Jungho Kang, Baewha Women's University, Korea
Yi Pan, Georgia State University USA
Vincenzo Loia, University of Salerno, Italy

Message from the MUE 2022 Program Chairs

Welcome to the 16th International Conference on Multimedia and Ubiquitous Engineering (MUE 2022), which will be held Jeju, Korea on April 21-23, 2022. MUE 2022 will be the most comprehensive conference focused on the various aspects of multimedia and ubiquitous engineering. It will provide an opportunity for academic and industry professionals to discuss recent progress in the area of multimedia and ubiquitous environment. In addition, the conference will publish high quality papers which are closely related to the various theories and practical applications in multimedia and ubiquitous engineering. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in these important subjects.

For MUE 2022, we received many paper submissions, after a rigorous peer review process, we accepted only articles with high quality for the MUE 2022 proceedings. All submitted papers have undergone blind reviews by at least two reviewers from the technical program committee, which consists of leading researchers around the globe. Without their hard work, achieving such a high-quality proceeding would not have been possible. We take this opportunity to thank them for their great support and cooperation. Finally, we would like to thank all of you for your participation in our conference, and also thank all the authors, reviewers, and organizing committee members. Thank you and enjoy the conference!

MUE 2022 Program Chairs

Ji Su Park, Jeonju University, Korea
Fei Hao, Xi'an Normal University, China
Alireza Souri, Islamic Azad University, Iran
Sherali Zeadally, University of Kentucky, USA

Organization

Honorary Chair

Young-Sik Jeong, Dongguk University, Korea

Steering Chair

James J. Park, SeoulTech, Korea

General Chairs

Jungho Kang, Baewha Women's University, Korea

Yi Pan, Georgia State University USA

Vincenzo Loia, University of Salerno, Italy

Program Chairs

Ji Su Park, Jeonju University, Korea

Fei Hao, Xi'an Normal University, China

Alireza Souri, Islamic Azad University, Iran

Sherali Zeadally, University of Kentucky, USA

International Advisory Committee

Byung Seok Shin, Inha University, Korea

Jianhua Ma, Hosei University, Japan

Shu-Ching Chen, Florida International University, USA

Han-Chieh, Chao National Ilan University, Taiwan

Weijia Jia, Shanghai Jiaotong University, China

Borko Furht, Florida Atlantic University, USA

Thomas Plagemann, University of Oslo, Norway

Roger Zimmermann, National University of Singapore, Singapore

Stephan Olariu, Old Dominion University, USA

Koji Nakano, University of Hiroshima, Japan

Houcine Hassan, Universitat Politecnica de Valencia, Spain

Publicity Chairs

Wei Song, North China University of Technology, China

Joon-Min Gil, Catholic University of Daegu, Korea

Junbo Wang, University of Aizu, Japan

Deok Gyu Lee, Seowon University, Korea

Seokhong Min, Mindata co, Korea

Byoungwook Kim, Dongguk University, Korea

Hang-Bae Chang, Chung-Ang University, Korea

Yunhee Kang, Baekseok University, Korea

Chao-Tung Yang, Tunghai University, Taiwan

Ki-Sik Kong, Namseoul University, Korea

Xu Zhang, Chongqing University of Posts and Telecommunications, China

Waleed Farag, Indiana University of Pennsylvania, USA

Mingjie Liu, Chongqing University of Post and Telecom, China

Invited Speaker



Multimedia image processing in COVID-19 diagnosis

Prof. Yu-Dong Zhang

School of Computing and Mathematical Sciences
University of Leicester, UK

Abstract:

A CT scan is a medical imaging technique used in radiology to get detailed images of the body noninvasively for diagnostic purposes. COVID-19 is a pandemic disease that already caused more than 6.0 million deaths until 11/March/2022. This talk will discuss the recent advances in multimedia image processing methods and models for chest CT-based diagnosis in COVID-19 and other two chest-related diseases: secondary pulmonary tuberculosis and community-acquired pneumonia.

Biography:

Prof. Yu-Dong Zhang received a Ph.D. degree in Signal and Information Processing from Southeast University in 2010. He worked as a postdoc from 2010 to 2012 with Columbia University, USA, and as an Assistant Research Scientist from 2012 to 2013 with the Research Foundation of Mental Hygiene (RFMH), USA. He served as a Full Professor from 2013 to 2017 with Nanjing Normal University. Now he serves as a Professor at the School of Computing and Mathematical Sciences, University of Leicester, UK.

He is the Fellow of IET, Fellow of EAI, Fellow of BCS, Senior Members of IEEE, IES, and ACM, and Distinguished Speaker of ACM. He was the 2019 & 2021 recipient of Clarivate Highly Cited Researcher. He is included in Top Scientist in Research.com. He authors over 300 peer-reviewed articles, including more than 50 ESI Highly Cited Papers and 5 ESI Hot Papers. He has conducted many successful industrial projects and academic grants from NIH, Royal Society, GCRF, EPSRC, MRC, British Council, and NSFC. He has given over 120 invited talks at international conferences, universities, and companies. He has served as (Co-)Chair for more than 60 international conferences and workshops.

PROGRAM Schedule for FutureTech 2022 & MUE 2022

Day 1, April. 21, 2022		
Time	Min	HALL A
09:30-11:30	120	Organizing Committee Meeting I (Only for Invited Members)
11:30-12:30	60	Lunch
12:30-13:00	30	Registration
13:00-14:30	90	Session A-1 FutureTech 2022 & MUE 2022 Chairs: Yan Li
14:30-14:50	20	Coffee Break
14:50-16:20	90	Session A-2 FutureTech 2022 & MUE 2022 Chair: Byoungwook Kim
16:20-16:40	20	Coffee Break
16:40-18:00	80	Keynote Speech Multimedia image processing in COVID-19 diagnosis Prof. Yu-Dong Zhang Chair: Joon-Min Gil
18:00-18:20	20	Break
18:20-20:00	100	Banquet

Day 2, April. 22, 2022		
Time	Min	HALL A
10:00-10:30	30	Registration (Open only until 12:00)

10:30-12:00	90	Online Session A-3 FutureTech 2022 & MUE 2022 Chair: Ji Su Park
12:00-13:00	60	Lunch
13:00-15:00	120	Local Arrangement Committee Meeting (Only for Invited Members)

Day 3, April. 23, 2022		
Time	Min	HALL -A
10:00-12:00	120	Executive Meeting - Organized by FutureTech 2022, MUE 2022 (Only for Invited Members)
12:00-13:00	60	Lunch
13:00-15:00	120	Organizing Committee Meeting II (Only for Invited Members)

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 15 minutes (12 minutes for the presentation itself and 3 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.
4. All online sections are played recorded video only.
5. For Q&A in the online section, please email the author.

DETAILED SCHEDULE FOR
The 17th International Conference on Future Information
Technology (FutureTech 2022)
&
The 16th International Conference on
Multimedia and Ubiquitous Engineering
(MUE 2022)

Day 1, April 21, 2022 (Thursday)

09:30-11:30 Organizing Committee Meeting I

11:30-12:30 Lunch

12:30-13:00 Registration

13:00-14:30 Session A-1 FutureTech 2022 & MUE 2022
(Chair: Yan Li)

- 1. Meta-Airport: A Study on the Future of Airport Operation and Passenger Experience**
Jooik Jung, Ihnsik Weon, Seok-Hyun Son, Byung-Seok Seo
- 2. Construction of Incheon International Airport Traffic Management 3D Platform using Metaverse Technology**
Ihnsik Weon, Jooik Jung, Seokhyun Son, ByungSeok Seo
- 3. Cross-Modal Contrastive Representation Learning for Audio-to-Image Generation**
HaeChun Chung, JooYong Shim, Jong-Kook Kim
- 4. LMS using Machine Learning based Optimal target machine Selection for Resource Management in Cloud computing**
Se-Yun Lee, A-Young Son
- 5. Uncertainty Estimation of Hand Gesture Recognition Models based on Bayesian Approximation**
Zongjing Cao, Yan Li, Byeong-Seok Shin
- 6. Automated Photo Curation based on Cinematographic Shot Pattern**
Dongwann Kang, Sanghyun Seo, Yangmi Lim

14:30-14:50 Coffee Break

14:50-16:20 Session A-2 FutureTech 2022 & MUE 2022
(Chair: Byoungwook Kim)

- 1. Absolute Fair Maximal Cliques Detection in Attributed Social Networks**
Fei Hao, Wenqing Huang, Doo-Soon Park
- 2. Development of Ensemble Speech Emotion Recognition Model based on Attention through Low-level Voice Feature Extraction**
Hyun-Sam Shin, Jun-Ki Hong, Ji-Su Lee, Seung-Il Sonh, Sung-Chan Hong
- 3. BERT-based Pretraining Model for Gender Bias and Hate Speech Detection**
Sanggeon Yun, Seungshik Kang, Hyeokman Kim
- 4. Quality management method for wild-simulated ginseng using blockchain token**
Youngjun Sung, Yoojae Won
- 5. Dynamic Real-Time Lane Detection Method**
Qiaosong Chen, Xiaolang Zhu, Mingjie Liu, Changhao Piao
- 6. GPGPU task Monitoring Technique to Managing GPU usage Information for Containers**
Jihun Kang, Joon-Min Gil

16:20-16:40 Coffee Break

16:40-18:00 Keynote Speech
(Chair: Joon-Min Gil)

Multimedia image processing in COVID-19 diagnosis
Prof. Yu-Dong Zhang

18:00-18:20 Break

18:20-20:00 Banquet

Day 2, April 22, 2022 (Friday)

10:00-10:30 Registration (Open only until 12:00)

10:30-12:00 Online Session FutureTech 2022 & MUE 2022
(Chair: Ji Su Park)

- 1. High Availability Resource Management using Deep Neural Network**
Byeonghui Jeong, Jueun Jeon, Seungyeon Baek, Kyuwon Park, Sihyun Park, Young-Sik Jeong
- 2. Underground Infrastructure Damage Prevention Method through Spatial Clustering on Underground Facility Big Data**
Yeongwook Yang, Jin Gon Shon, Byoungwook Kim, Hong-Jun Jang, Ji Su Park
- 3. An Analysis of Main Causes of Undergroud Infrastructure Damage**
Byoungwook Kim, Yeongwook Yang, Ji Su Park, Hong-Jun Jang
- 4. Quantum Approach for self-learning Metaverse Environment**
Abir EL Azzaoui, Jaesoo Kim, Dongwann Kang, Jong Hyuk Park
- 5. Computation Offloading with Energy Harvesting Devices in Wireless Powered NOMA-MEC Systems: DRL Approach**
Sekione Reward Jeremiah, Mikail Mohammed Salim, Changhoon Lee, Jong Hyuk Park

12:00-13:00 Lunch

13:00-15:00 Local Arrangement Committee Meeting

Day 3, April 23, 2022 (Saturday)

10:00-12:00 Executive Meeting – Organized by FutureTech 2022, MUE 2022

12:00-13:00 Lunch

13:00-15:00 Organizing Committee Meeting II

Conference Venue



MAISON GLAD JEJU

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

