The 13th International Conference on Future Information Technology (FutureTech 2018)
&
The 12th International Conference on Multimedia and Ubiquitous Engineering (MUE 2018)

April 23-25, 2018
Salerno, Italy

Organized by

FutureTech, MUE & KIPS CSWRG

2018 International Conferences

(Sponsored / Technically Sponsored by KIPS / KIPS SWRG)

Aug 21-23, Jeju, Korea

- The 2nd International Conference on Big data, IoT, and Cloud Computing (BIC 2018)

Dec. 17 - 19, Okinawa, Japan

- The 12th KIPS International Conference on Ubiquitous Information Technologies and Applications (CUTE 2018)
- The 10th KIPS International Conference on Computer Science and its Applications (CSA 2018)

Message from the FutureTech 2018 General Chairs

FutureTech 2018 is the 13th event of the series of international scientific conference. This conference takes place on April 23-25, 2018 in Salerno, Italy. The aim of the FutureTech 2018 is to provide an international forum for scientific research in the technologies and application of information technology. FutureTech 2018 is the next edition of FutureTech2017 (Seoul, Korea), FutureTech2016 (Beijing, China), FutureTech2015 (Hanoi, Vietnam), FutureTech2014 (Zhangjiajie, China), FutureTech2013 (Gwangju, Korea), FutureTech2012 (Vancouver, Canada), FutureTech2011 (Loutraki, Greece), FutureTech2010 (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). Our special thanks go to the Program Chairs: Giuseppe Fenza (University of Salerno, Italy), Guangchun (Luo University of Electronic Science and Technology of China, China), Ching-Hsien Hsu (Chung Hua University, Taiwan), Jungho Kang (Soongsil University, Korea), Houcine Hassan (Universitat Politecnica de Valencia, Spain), Kwang-il Hwang (Incheon national University, Korea), Jin Wang (Yangzhou University, China), 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 2018 General Chairs

Vincenzo Loia, University of Salerno, Italy
Kim-Kwang Raymond Choo, University of Texas at San Antonio, USA
Gangman Yi, Dongguk University, Korea
Jiannong Cao, Hong Kong Polytechnic University, Hong Kong

Message from the FutureTech 2018 Program Chairs

Welcome to the 13th International Conference on Future Information Technology (FutureTech 2018), which will be held in Salerno, Italy on April 23-25, 2018. FutureTech 2018 will 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 2018, we received many paper submissions, after a rigorous peer review process, we accepted only articles with high quality for the FutureTech 2018 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. We would like to sincerely thank the following invited speaker who kindly accepted our invitations, and, in this way, helped to meet the objectives of the conference: Prof. Yi Pan, Regents' Professor and Chair of Department of Computer Science, Georgia State University, Atlanta, Georgia, USA. 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!

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Message from the MUE 2018 General Chairs

MUE 2018 is the 12th event of the series of international scientific conference. This conference takes place on April 23-25, 2018 in Salerno, Italy. The aim of the MUE 2018 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-17 (Seoul , Korea), MUE-16 (Beijing, China), MUE-15 (Hanoi, Vietnam), MUE-14 (Zhangjiajie, China), MUE-13 (Seoul, Korea), MUE-12 (Madrid, Spain), MUE-11 (Loutraki, Greece), MUE-10 (Cebu, Philippines), MUE-09 (Qingdao, China), MUE-08 (Busan, Korea), and MUE-07 (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:
Carmen De Maio (University of Salerno, Italy), Naveen Chilamkurti (La Trobe University, Australia), Ka Lok Man (Xi'an Jiaotong-Liverpool University, China), Yunsick Sung, (Dongguk University, Korea), Joon-Min Gil (Catholic University of Daegu, Korea), Wei Song (North China University of Technology, China), 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 2018 General Chairs

Vincenzo Loia, University of Salerno, Italy
Shu-Ching Chen, Florida International University, USA
Yi Pan, Georgia State University USA
Jianhua Ma, Hosei University, Japan

Message from the MUE 2018 Program Chairs

Welcome to the 12th International Conference on Multimedia and Ubiquitous Engineering (MUE 2018), which will be held Seoul, South Korea on May 22-24, 2018. MUE 2018 will 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 2018, we received many paper submissions, after a rigorous peer review process, we accepted only articles with high quality for the MUE 2018 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!

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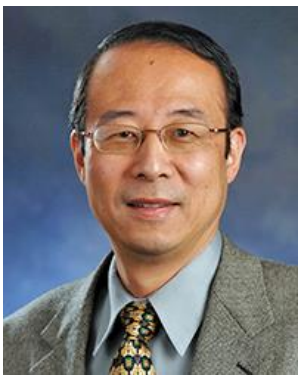
Ni Yaodong, University of International Business & Economics, Beijing China
Li Xiang, Beijing University of Chemical Technology, China

Invited Speaker



Deep Learning for Big Data Applications - Challenges and Future Directions

Yi Pan, Ph.D.

Regents' Professor and Chair
Department of Computer Science
Georgia State University
Atlanta, Georgia, USA

Abstract

Due to improvements in mathematical formulas and increasingly powerful computers, we can now model many more layers of virtual neurons (deep neural networks or deep learning) than ever before. Deep learning is now producing many remarkable recent successes in computer vision, automatic speech recognition, natural language processing, audio recognition, and medical imaging processing. Although various deep learning architectures have been applied to many big data applications, extending deep learning into more complicated applications such as bioinformatics will require more conceptual and software breakthroughs, not to mention many more advances in processing power. In this talk, I will outline the challenges and problems in existing deep learning methods when applying it to big data in general and bioinformatics in particular. I will describe a few novel architectures and algorithms recently proposed by us to improve the accuracies and learning speeds of the existing deep learning technologies. These new deep learning architectures and algorithms will be applied to several big data applications including image processing, DNA sequence annotation, long intergenic non-coding RNA detection, and gene structure prediction. The data encoding schemes, the choice of architectures and methods used will be described in details. Performance comparisons with other machine learning and existing deep learning methods will be reported. The experimental results show that deep learning is very promising for many big data applications, but requires selection of suitable models and a lot of tuning to be effective. Future research directions in this exciting area will also be outlined.

Biography

Yi Pan is currently a Regents' Professor and Chair of Computer Science at Georgia State University, USA. He has served as an Associate Dean and Chair of Biology Department during 2013-2017 and Chair of Computer Science during 2006-2013. He is also a visiting Changjiang Chair Professor at Central South University, China. Dr. Pan received his B.Eng. and M.Eng. degrees in computer engineering from Tsinghua University, China, in 1982 and 1984, respectively, and his Ph.D. degree in computer science from the University of Pittsburgh, USA, in 1991. His profile has been featured as a distinguished alumnus in both Tsinghua Alumni Newsletter and University of Pittsburgh CS Alumni Newsletter. Dr. Pan's research interests include parallel and cloud computing, wireless networks, and bioinformatics. Dr. Pan has published more than 200 journal papers with over 80 papers published in various IEEE journals. In addition, he has published over 150 papers in refereed conferences. He has also co-authored/co-edited 43 books. His work has been cited more than 8000 times. Dr. Pan has served as an editor-in-chief or editorial board member for 15 journals including 7 IEEE Transactions. He is the recipient of many awards including IEEE Transactions Best Paper Award, several other conference and journal best paper awards, 4 IBM Faculty Awards, 2 JSPS Senior Invitation Fellowships, IEEE BIBE Outstanding Achievement Award, NSF Research Opportunity Award, and AFOSR Summer Faculty Research Fellowship. He has organized many international conferences and delivered keynote speeches at over 60 international conferences around the world.

PROGRAM SCHEDULE FOR FUTURETECH2018 & MUE2018

Day 1, April 23, 2018				
Time	**Min**	**HALL -A**	**HALL B**	**HALL C**
08:40-09:00	20	**Registration**		
09:00-10:30	90	**Session A-1 FT-1**	**Session B-1 MUE-1**	**Session C-1 SBDA 2018**
10:30-11:00	30	**Coffee Break**		
11:00-12:30	90	**Session A-2 FT-2**	**Session B-2 MUE-2**	**Session C-2 ISWP 2018**
12:30-13:30	60	**Lunch**		
13:30-14:30	60	**Plenary Talk: Prof. Yi Pan** Department of Computer Science, Georgia State University, Atlanta, Georgia, USA **Keynote: Deep Learning for Big Data Applications - Challenges and Future Directions**		
14:30-16:30	120	**Session A-3 FT-3**	**Session B-3 MUE-3**	**Session C-3 HRH 2018**
16:30-18:00	90	**Break (Bus will depart at 17:00 in the University of Salerno and will depart at 17:45 in front of the Grand Salerno hotel.)**		
18:30-20:00	90	**Banquet at Oasis Village Resort**		
20:00-	-	**Break (Bus will depart at 20:00 at Oasis Village Resort.)**		

1. **A paper presentation should be made by one of authors of the paper for 15 minute (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 7 laptops running the Adobe Reader and Microsoft Office for paper presentations will be prepared. Please prepare for your presentation.**

Day 2, April 24, 2018		
Time	**Min**	**HALL -A**
09:00-10:30	90	**Session A-1** **FT-4**
10:30-11:00	30	**Break**
11:00-12:30	90	**Session A-2** **MUE-4/FT-5**
12:30-13:30	60	**Lunch (Not Provided)**
13:30-15:00	90	**Organizing Committee Meeting I**
15:00-15:10	10	**Break**
15:10-16:40	90	**Local Committee Meeting I**

Day 3, April 25, 2018				
Time	**Min**	**HALL –A**	**HALL B**	**HALL C**
09:00-10:30	90	**Organizing Committee Meeting II**		
10:30-10:40	10	**Break**		
10:40-12:10	90	**Local Committee Meeting II**		

DETAILED SCHEDULE FOR THE 13TH INTERNATIONAL CONFERENCE ON FUTURE INFORMATION TECHNOLOGY (FUTURETECH 2018) AND THE 12TH INTERNATIONAL CONFERENCE ON MULTIMEDIA AND UBIQUITOUS ENGINEERING (MUE 2018)

Day 1, April 23, 2018 (Monday)

08:40-9:00 Registration

09:00-10:30 Session A-1 : FT-1
(HALL A)

1. **Recovery Schemes for the Higher Reliable Flash Storage Systems**
   Seung-Ho Lim
2. **Superpixel based ImageCut using Object Detection**
   Jong-Won Ko, Seung-Hyuck Choi
3. **Towards Unified Deep Learning Model for NSFW Image and Video Captioning**
   Jong-Won Ko, Dong-Hyun Hwang
4. **Practice of Hybrid Approach to Develop a State-based Control Embedded Software Product Line**
   Jeong Ah Kim, JinSeon Yang
5. **Quantization Parameter and Lagrange Multiplier Determination for Virtual Reality 360 Video Source Coding**
   Ling Tian, Chengzong Peng, Yimin Zhou, Hongyu Wang

09:00-10:30 Session B-1 : MUE-1
(HALL B)

1. **Extended MF Config Module for FreeType Rasterizer**
   Jaeyoung Choi, Ammar Ul Hassan
2. **An Analysis of Consumption Behavior Pattern Cluster that reflects both on-offline by Region**
   Jinah Kim, Nammee Moon
3. **A Scene Change Detection Framework Based on deep learning and image matching**
   Dayou Jiang, Jongweon Kim

09:00-10:30 Session C-1 : SBDA 2018
(HALL C)

1. **A deep learning approach for road damage classification**
   Gioele Ciaparrone, Angela Serra, Vito Covito, Paolo Finelli, Carlo Alberto Scarpato, Roberto Tagliaferri
2. **A Framework for Situated Learning Scenarios based on Learning Cells and Augmented Reality**
   Angelo Gaeta, Francesco Orciuoli, Mimmo Parente, Minjuan Wang
3. **Discovery of Interesting Users in Twitter by using Rough sets**
   Carmen De Maio, Stefania Boffa

10:30-11:00 Coffee break

11:00-12:30 Session A-2 : FT-2
(HALL A)

1. **Verification of Stop-motion Method Allowing the Shortest Moving Time in (sRd-Camera-pRd) Type**
   Soon-Ho Kim, Chi-Su Kim
2. **A Long-term Highway Traffic Flow Prediction Method for Holiday**
   Guoming Lu, Jiaxin Li, Jian Chen, Aiguo Chen, Jianbin Gu, Ruiting Pang
3. **Machine Learning based Materials Properties Prediction Platform for Fast Discovery of Advanced Materials**
   Jeongcheol Lee, Sunil Ahn, Jaesung Kim, Sik Lee, Kumwon Cho
4. **View Designer: Building Extensible and Customizable Presentation for Various Scientific Data**
   Jaesung Kim, Sunil Ahn, Jeongchoel Lee, Sik Lee, Kumwon Cho
5. **Toward the Spatio-Temporal Search System for Reliable Results in Crowdsourced LBSs**
   Byoungwook Kim, Hong-Jun Jang

11:00-12:30 Session B-2 : MUE-2
(HALL B)

1. **A Scene Change Detection Framework Based on deep learning and image matching**
   Dayou Jiang, Jongweon Kim
2. **Predicting the Audience Behavior in Selecting TV Channels**
   Ciro Gaglione, Elena Mejuto Villa
3. **On the Role of Deep Learning in Processing Time Series**
   Elena Mejuto Villa, Pravesh Kriplani

11:00-12:30 Session C-2 : ISWP 2018
(HALL C)

1. **Path Planing Method between Two Waypoints using Bayesian Probability**
   Jeonghoon Jeong, Yunsick Sung
2. **Investigating Characteristics of Traffic Accidents in Sites with Automated Speed Enforcement Cameras in Urban Area**
   Shin Hyung Park, Shin Hyoung Park, Oh Hoon Kwon

12:30-13:30 Lunch

13:30-14:30 **Keynote**

"Deep Learning for Big Data Applications - Challenges and Future Directions"

Dr. Yi Pan,
Department of Computer Science, Georgia State University,
Atlanta, Georgia, USA

14:30-16:30 **Session A-3 : FT-3**
(HALL A)

1. **A Hash-based K-Prototype Algorithm**
   Byoungwook Kim, Jaehwa Chung, Hong-Jun Jang
2. **Online Data Flow Prediction using Generalized Inverse Based Extreme Learning Machine**
   Ying Jia
3. **A Test Data Generation for Performance Testing in Massive Data Processing Systems**
   Sunkyung Kim, Ji Su Park, Jin Gon Shon
4. **A Study on the variability analysis method with cases for process tailoring**
   SeungYoung Choi, Jeong Ah Kim, Yeonghwa Cho

14:30-16:30 **Session B-3 : MUE-3**
(HALL B)

1. **Preliminary of Selfish Mining Strategy on the Decentralized Model of Personal Health Information**
   Sandi Rahmadika, Kyung-Hyune Rhee
2. **A Blockchain-Based Access Control with Micropayment Channels**
   Siwan Noh, Youngho Park, Kyung-Hyune Rhee
3. **A Fog Computing-based Automotive Data Overload Protection System with Real-Time Analysis**
   Byung Wook Kwon, Jungho Kang, Jong Hyuk Park
4. **A Design of Enhanced Integrity Preservation based on Blockchain**
   Jung Hyuk Ryu, Jungho Kang, Jong Hyuk Park

14:30-16:30 **Session C-3 : HRH 2018**
(HALL C)

16:30-18:00 **Break**

18:30-20:00 **Banquet**

Day 2, April 24, 2018 (Tuesday)

09:00-10:30 **Session A-1 : FT-4**
(HALL A)

1. **Anomaly Detection via Trajectory Representation**
   Ruizhi Wu, Guangchun Luo, Ke Qin
2. **Mobile Application for the Teaching of English**
   Blanka Klímová, Aleš Berger
3. **Mobile Phone Apps as Support Tools for People with Dementia**
   Blanka Klímová, Zuzana Boučková, Josef Toman
4. **Optimization of running a Personal Assistance Center – A Czech case study**
   Petra Poulova, Blanka Klimova

10:30-11:00 **Break**

11:00-12:30 **Session A-1 : MUE-4 / FT-5**
(HALL A)

1. **A Zero-watermarking Algorithm Based on Visual Cryptography and Matrix Norm in order to Withstand Printing and Scanning**
   De Li, XianLong Dai, Liang Chen, LiHua Cui
2. **Animation Zero Watermarking Algorithm Based on Edge Feature**
   De Li, Shan Yang, ZhiXun Zheng, LiHua Cui
3. **Data Science – A Future Educational Potential**
   Petra Poulova, Blanka Klimova, Jaroslava Mikulecká
4. **Load Predicting Algorithm based on improved Growing Self-Organized Map**
   Nawaf Alharbe

12:30-13:30 **Lunch (Not Provided)**

13:30-15:00 **Organizing Committee Meeting I**
(HALL A)

15:00-15:10 **Break**

15:10-16:40 **Local Committee Meeting I**
(HALL A)

Day 3, April 25, 2018 (Wednesday)

09:00-10:30 **Organizing Committee Meeting II**
(HALL A)

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

10:40-12:10 **Local Committee Meeting II**
(HALL A)

CONFERENCE VENUE

University of Salerno (http://web.unisa.it/en)

Via Giovanni Paolo II, 132, 84084 Fisciano SA, Italy (Map URL)

How to get the University of Salerno

I. By Bus

- From Salerno: Vittorio Veneto Square-Rail, courier CSTP ran nr.7, 17, 27 (every 20').
- From Naples: SITA courier Via Ferraris, where is the INPS, at 300 meters from Garibaldi Square (Central Station).

II. By Car

- From Naples: A3 motorway (Napoli-Salerno-Reggio Calabria); continue towards the south and take the freeway Salerno-Avellino; continue towards Avellino and exit at University, at the roundabout turn right and continue to the right.
- From Naples: Motorway A16 (Napoli-Bari); from barrier _ East Naples merge onto A30 (Caserta-Salerno), direction Salerno, and go up the ramp to Avellino. Shortly after entering on the motorway Salerno-Avellino, exit at Fisciano-Mercato San Severino; at the end of the exit go to the right.
- From the East (Bari): Motorway A16 (Bari-Napoli); exit Avellino East and take the freeway Avellino Square-Salerno; exit at Fisciano-Mercato San Severino; at the end of the exit go to the right.
- From the South (Reggio Calabria): Motorway A3 (Salerno-Reggio Calabria-Naples); before Salerno take the fork for the A1 and A16 motorways, and, continuing in the direction Avellino, exit at University, at the roundabout turn right and continue to the right.

III. By Train

- From Salerno station: in front the station courier CSTP for Fisciano University or Taxi
- From Naples Central Station to station Salerno:
  - autolinee SITA: Via Ferraris, where is the INPS, at 300 meters from Garibaldi Square (Central Station).
  - Treno

IV. By Plane

- Capodichino Airport (Naples):
- From the airport: SITA for Fisciano University (9:30, 13:30 and 19:30) and 16:00 for Salerno center (Place de la Concorde in front of the train station)
- From the airport: bus Alibus (direct line of the Neapolitan Mobility connecting the airport to the railway station in Garibaldi Square. Periodicity average in minutes: 20 weekdays, Saturday 20, festive 20. Tickets can be purchased on board).