



# The 6th International Conference on Frontier Computing

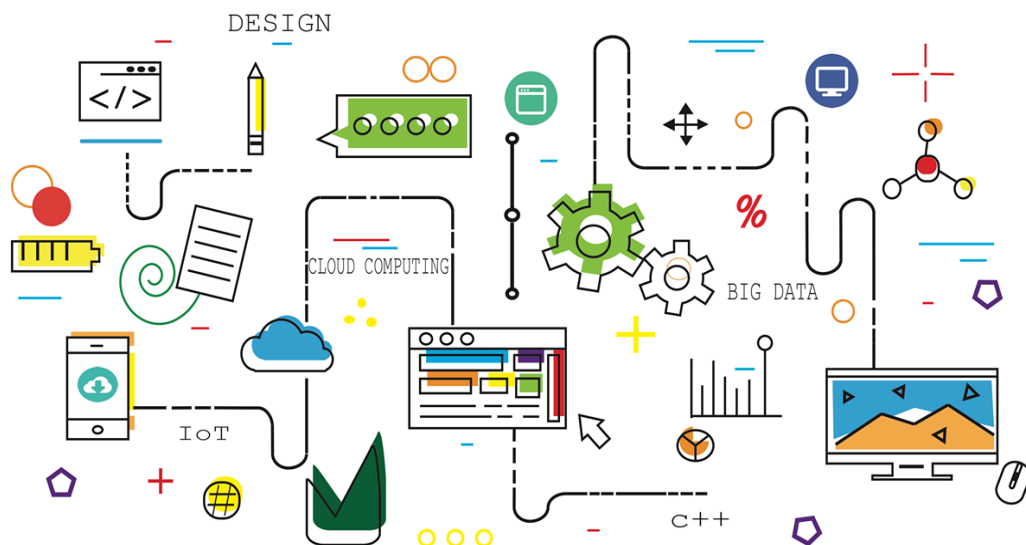
-Theory, Technologies and Applications

## FC 2017

July 12-14

Osaka, Japan

### Final Program



**IET** The Institution of  
Engineering and Technology



**Frontier  
Computing**

# **The 6th International Conference on Frontier Computing**

*~ Theory, Technologies, and Applications ~*

## **FC 2017**

Osaka, Japan  
July 12-14, 2017

**Organized by**

**Frontier Computing Conference Group**

## Message from General Chairs

The International Conference on Frontier Computing – Theory, Technologies, and Applications (FC) was first proposed in early 2010 on an IET executive meeting. This conference series aims at providing an open forum to reach a comprehensive understanding to the recent advances and emergence in information technology, science, and engineering, with the themes in the scope of Communication Network Technology and Applications, Communication Network Technology and Applications, Business Intelligence and Knowledge Management, Web Intelligence, and any related fields that prompt the development of information technology. This will be the fourth event of the series, in which fruitful results can be found in the digital library or conference proceedings of FC 2010 (Taichung, Taiwan), FC 2012 (Xining, China), FC 2013 (Gwangju, Korea), FC2015(Bangkok, Thailand) and FC2016 (Tokyo, Japan). Each event brings together the researchers worldwide to have excited and fruitful discussions as well as the future collaborations.

The papers accepted for inclusion in the conference proceeding primarily cover the topics: database and data mining, networking and communications, web and internet of things, embedded system, soft computing, social network analysis, security and privacy, optics communication, and ubiquitous/pervasive computing. Many papers have shown their great academic potential and value, and in addition, indicate promising directions of research in the focused realm of this conference series. We believe that the presentations of these accepted papers will be more exciting than the papers themselves, and lead to creative and innovative applications. We hope that the attendees (and readers as well) will find these results useful and inspiring to your field of specialization and future research.

On behalf of the organizing committee, we would like to thank the members of the organizing and the program committees, the authors, and the speakers for their dedication and contributions that make this conference possible. We would like to thank and welcome all participants to Osaka, Japan. Though most of countries may share some similar characteristics, you will find that culture of Japan is quite different from many aspects, such as art, religion, nomadic life style, food, and music. Osaka is the second largest city in Japan that combines the tradition and urban stuff. We encourage the participants to take this chance to see and experience Japan, especially the remote counties and the nomadic life style there. We also sincerely hope that all participants from overseas and from Japan enjoy the technical discussions at the conference, build a strong friendship, and establish ties for future collaborations.

We send our sincere appreciations to 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.

July 2017

Jen-Shiun Chiang  
Tamkang University, Taiwan  
FC 2017 General Chair

## Organization

### **Honorary Chairs**

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Wei-Chen Wu, Hsin Sheng College of Medical Care and Management, Taiwan  
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### **Special Session Chairs**

Kuan-Chou Lai, National Taichung University of Education, Taiwan  
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Xinghua Sun, Hebei North University, China  
Chengjiu Yin, Kobe University, Japan  
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Yi-Chun Liao, China University of Technology, Taiwan

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Yung-Hui Chen, LungHwa University of Science and Technology, Taiwan

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## Day 1

July 12, 2017 (Wednesday)

	Room_1	Room_2	Room_3
13:00~14:30	Session 1-1	Session 1-2	Session 1-3
14:30~15:00	Coffee Break		
15:00~16:30	Session 2-1	Session 2-2	Session 2-3
16:30~18:00	Session 3-1	Session 3-2	Session 3-3
18:00~	Enjoy the beauty of Osaka		

## Day 2

July 13, 2017 (Thursday)

	Room_1	Room_2	Room_3
09:00~10:30	Session 4-1	Session 4-2	Session 4-3
10:30~11:00	Coffee Break		
11:00~12:30	Session 5-1	Session 5-2	Session 5-3
12:30~13:30	Lunch		
13:30~14:30	Keynote Speech		
14:30~15:00	Coffee Break		
15:00~16:30	Session 6-1	Session 6-2	Fi Award Competition
16:30~18:00	Session 7-1	Session 7-2	
18:00~	Banquet		

## Day 3

July 14, 2016 (Friday)

10:30~12:00	Executive Meeting
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## Keynote Speaker



**Jing-Ming Guo**

**Professor**

**Vice Dean, College of EECS and Chairman, Innovative Incubation Center**

**National Taiwan University of Science and Technology, Taipei, Taiwan**

Email: [jmguo@seed.net.tw](mailto:jmguo@seed.net.tw)

URL: <http://homepage.ntust.edu.tw/jmguo/>

### Hybrid High-level and Low-level Features for Image Retrieval

#### Abstract

With the advances of the artificial intelligence, content-based image retrieval can be developed as multi-level schemes with low-level and high-level features involved. In this talk, the functions and extended advantages of the digital halftoning is introduced. An extremely low complexity compression scheme with the aid of digital halftoning is later presented. As most images are compressed and recorded, compressed domain features are thus intuitively adopted to form low-level features for the image retrieval. Conversely, features generated by deep learning can better characterize human perception through various operations such as convolution and pooling, and thus achieve effective retrieval performance. At the end of this lecture, the fusion descriptors from low- and high-level features will be introduced, and the hybrid image retrieval system will subsequently be demonstrated with practical examples.

#### Biography

**Jing-Ming Guo** received the Ph.D. degree from the Institute of Communication Engineering, National Taiwan University, Taipei, Taiwan, in 2004. He is currently a Professor with the Department of Electrical Engineering and the Vice Dean of the College of Electrical Engineering and Information Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan. He is also serving as the Director of the Innovative Business Incubation Center, Office of Research and Development. He was a visiting scholar at the Digital Video and Multimedia Lab, Department of Electrical Engineering, Columbia University, USA during June-August, 2015, and the Signal Processing Lab, Department of Electrical and Computer Engineering, University of California, Santa Barbara, USA from July 2002 to June 2003 and June-November, 2014. His research interests include multimedia signal processing, biometrics, computer vision, and digital halftoning.

Dr. Guo is a senior member of the IEEE and a Fellow of the IET. He has been promoted as a Distinguished Professor in 2012 for his significant research contributions. He received the Outstanding Professor Award on Electrical Engineering from Chinese Institute of Electrical Engineering in 2016, the Best Paper Award from the International Computer Symposium in 2014, the Outstanding youth Electrical Engineer Award from Chinese Institute of Electrical Engineering in 2011, the Outstanding young Investigator Award from the Institute of System Engineering in 2011, the Best Paper Award from the

IEEE International Conference on System Science and Engineering in 2011, the Excellence Teaching Award in 2009, the Research Excellence Award in 2008, the Acer Dragon Thesis Award in 2005, the Outstanding Paper Awards from IPPR, Computer Vision and Graphic Image Processing in 2005 and 2006, and the Outstanding Faculty Award in 2002 and 2003.

Dr. Guo was the General Chair of IEEE International Conference on Consumer Electronics in Taiwan in 2015 and 2016, and was the Technical program Chair for IEEE International Symposium on Intelligent Signal Processing and Communication Systems in 2012, IEEE International Symposium on Consumer Electronics in 2013, and IEEE International Conference on Consumer Electronics in Taiwan in 2014. He has served as a Best Paper Selection Committee member of the IEEE Transactions on Multimedia. He has been invited as a lecturer for the IEEE Signal Processing Society summer school on Signal and Information Processing in 2012 and 2013. He has been elected as the Chair of the IEEE Taipei Section GOLD group in 2012. He has served as a Guest Co-Editor of two special issues for Journal of the Chinese Institute of Engineers and Journal of Applied Science and Engineering. He serves on the Editorial Board of the Journal of Engineering, The Scientific World Journal, International Journal of Advanced Engineering Applications, Detection, and Open Journal of Information Security and Applications. Currently, he is Associate Editor of the IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, IEEE Signal Processing Letters, the Information Sciences, the Signal Processing, and Journal of Information Science and Engineering.



# Day 1

## July 12, 2017

### Session 1-1

#### The 2017 International Workshop on Advanced Information Communication and Applications (AICA 2017)

Chair: Jun-Hong Shen, Asia University, Taiwan

1. **Using sentiment analysis to Construct Facebook Posts Classification System**  
Ren-Pao Hsieh, Shu-Hong Lin, Tsung-Che Hsieh, Hsiu-Sen Chiang, Chia-Chen Chen and Mu-Yen Chen
2. **Sport Predicting System Modeling: An example of NBA Houston Rockets**  
Shu-Hong Lin, Ren-Pao Heish, Tsung-Che Hsieh, Min-Hsuan Fan, MuYen Chen
3. **Assessment of Distractions Based on EEG Analysis**  
Hsiu-Sen Chiang, Bo-Hao Wang and Chien-Yuan Lai
4. **Expandable Grid Indexing for Moving Objects**  
Jun-Hong Shen, Ching-Ta Lu and Mu-Yen Chen
5. **A study on the binding ability of truncated aptamers for the prostate specific antigen using both computational and experimental approaches**  
Hui-Ting Lin, Yang Wei, Wen-Yu Su, Chun-Ju Chan, Wen-Yih Chen, Jeffrey J. P. Tsai and Wen-Pin Hu

### Session 1-2

Chair: Chun-Chia Wang, Taipei City University of Science & Technology, Taiwan

1. **Digital watermarking scheme enhancing the robustness against cropping attack**  
Ching-Sheng Hsu and Shu-Fen Tu
2. **An empirical study on intranet behavior of users based on museum**  
Min-Feng Lee
3. **Performing Iris Segmentation by Using Geodesic Active Contour(GAC)**  
Yuan-Tsung Chang, Chih-Wen Ou and Yung-Hui Li
4. **Building Emotion Recognition Control System Using Raspberry Pi**  
Hung-Te Lee, Rung-Ching Chen and David Wei
5. **A Comparative Analysis on the Facebook Ads Attention of Different Interpersonal Relationships: Evidence from Eye Movements**  
Chun-Chia Wang, Jason C. Hung and Chia-Yu Chen

### Session 1-3

Chair: Hui Lin, Tamkang University, Taiwan

1. **A Research on the Developing Platform of Interactive Location Based Virtual Learning Application**  
Edgar Chia-Han Lin

2. **Bus Transfer Behavior Analysis based on Multi-Dimensional Clustering Mechanism**  
Edgar Chia-Han Lin
3. **Large Dynamic Tiled Display System and Method Thereof**  
Shih-Nung Chen
4. **Removal of Impulse Noise Using Gain Factors Adapted by Noise-Free Pixel Number and Pixel Variation**  
Ching-Ta Lu, Jun-Hong Shen, Mu-Yen Chen, Ling-Ling Wang and Chih-Chan Hsu
5. **Secure Cyber Physical System R&D Project issue in Korea**  
Donghyeok Lee , Jihee Jeon, and Namje Park

## Session 2-1

### The 2017 International Workshop on Information Security, Intelligent Medical and Geographic Information System (ISIMGIS 2017)

Chair: Wei-Chen Wu, Hsin Sheng College of Medical Care and Management, Taiwan

1. **The Next Generation of Internet of Things: Internet of Vehicles**  
Wei-Chen Wu, Homg-Twu Liaw
2. **Building Indoor Positioning System for Premium Senior Citizens by Using Beacon**  
Jiun-Ting Chen and Yui-Liang Chen
3. **A Privacy Impact Considered Risk Assessment Model**  
Yu-Chih Wei, Wei-Chen Wu, Ya-Chi Chu and I-Long Lin
4. **Classifying Targeted Email Attacks**  
Chia-Mei Chen, Gu-Hsin Lai and Wei-Chen Wu
5. **Using Data Mining to Study of Relationship Between Antibiotic and Influenza**  
Hsin-Hua Kung, Jui-Hung Kao, Chien-Yeh Hsu, Homg-Twu Liaw and Chiao-Yu Yang

## Session 2-2

Chair: Wen-Hsing Kao, Overseas Chinese University, Taiwan

1. **The Research of Retention rate for higher Education by using Data Mining Technique**  
Wen-Hsing Kao, Pi-Chung Wang, Kuan- Cheng Lin, Min-Hui Ding and Chien-Ya Lin
2. **Using Data Mining to construct students internship model**  
Wen-Hsing Kao, Pi-Chung Wang, Kuan- Cheng Lin, Min-Hui Ding
3. **Utilization of library resource in Overseas Chinese University**  
Wen-Hsing Kao, Bo-Shen Liou, Hsien-Wei Yan and Shu-Yu S. Wang
4. **An analysis of student ability indicator - based on OCU's statistics**  
Wen-Hsing Kao, Hsien-Wei Yang and Bo-Shen Liou
5. **The Study of Buying Motives on Compulsive Buying Online**  
Kuang-Yu Chang, Leo Huang and Chen-Hsien Lin

## Session 2-3

Chair: Neil Y. Yen, University of Aizu, Japan

1. **Application of Multidimensional Visualization Technology in Sliding Isolation**  
Linjing Wei
2. **A Research on the IOT Perception Environment Security and Privacy Protection Technology**  
Xinli Zhou, Liangbin Yang and Yanmei Kang
3. **Traffic Sign classification base on Latent Dirichlet Allocation**  
Lei Song, Zheyuan Liu, Xiaoteng Zhang, Huixian Duan, Na Liu and Jie Dai
4. **A Novel Indoors Visible Light Communication Positioning System**  
Shih-Hao Chang and Shan-Hsiang Shen

## Session 3-1

### The 2017 International Workshop on Information Security, Intelligent Medical and Geographic Information System (ISIMGIS 2017)

Chair: Wei-Chen Wu, Hsin Sheng College of Medical Care and Management, Taiwan

1. **Data Mining Technology combined with out-of-hospital cardiac arrest, symptom association and prediction model probing**  
Chih-Chun Chang, Jui-Hung Kao, Chien-Yeh Hsu, Homg-Twu Liaw, and Tse-Chun Wang
2. **Critical Perspectives on Learning Interface Design of Music Sight-Singing: Audition vs. Vision**  
Yu Ting Huang and Chi Nung Chu
3. **The Research of the Seven Steps of Normalized Object Oriented Design Class Diagram**  
Yih-Chearng Shiue, Sheng-Hung Lo and Kuan-Fu Liu
4. **The optimization architecture of storage in the big data analysis system**  
Ping-I Chen and Fu-Jheng Jheng
5. **Sleeping Customer Detection Using Support Vector Machine**  
Pin-Liang Chen, Ping-Che Yang and Tsun Ku

## Session 3-2

Chair: Chuan-Feng Chiu, Minghsin University of Science and Technology, Taiwan

1. **The Design and Implementation of Cloud-based Binary Image Customization System for User-Shooting Photos**  
Chuan-Feng Chiu, Yu-Chih Hsu and Ping-Ming Sung
2. **Five-round Adaptive Diagnosis on Hypercubes**  
Y-Chuang Chen and Yi-Gang Liou
3. **The Development of Facial Micro-Expression Recognition System**  
Kuan-Cheng Lin, Min-Chin Lin and Jason C. Hung
4. **RNN-based model for Bio-NER in Chinese EMRs-Special session on Advanced Topics in Big Data Science and Computational Intelligence**  
Shenhe Zhao, Jianqiang Li, Zhihua Sun, Jijiang Yang, Qing Wang, Bo Liu and Xi Meng
5. **Query Expansion for Improved Medical Search**  
Yangyang Kang, Jianqiang Li, Hong Wu, Jijiang Yang and Tingwei Zhong

## **Session 3-3**

Chair: Chih-Hsien Hsia, Chinese Culture University, Taiwan

1. **Modeling and Interpreting User Navigation Patterns in MOOCs**  
Xiangyu Zhang and Huiping Lin
2. **Clustering of Freight Vehicle Driving Behavior Based on Vehicle Networking Data Mining**  
Liangbin Yang and Xiao Wang
3. **A Study on the Computer Aided English Translation of Local Legal Based on Parallel Corpus**  
Zhang Zhijie
4. **The interactive virtual coaching system for motion learning**  
Wei-Ming Chen and De-Li Tsai
5. **Performance Assessment under Different Impulsive Noise Models for Narrowband Powerline Communications**  
Yu-Xain Chena, Rong-Sian Laia, Shao-Hang Lub, and Ying-Ren Chien

## Day 2

### July 13, 2017

#### Session 4-1

Chair: Hsuan-Ming Feng, National Quemoy University, Taiwan

1. **BRIR Refinement with Bone Conduction Headphones to Improve Spatial Sound Reproduction in Conventional Headphones**  
Shingchern You and Zhi-You Xie
2. **A Web Crawler Supporting Interactive and Incremental User Directives**  
Woei-Kae Chen, Chien-Hung Liu and Ke-Ming Chen
3. **Image Segmentation-Based Web Text Location Applications**  
Yan-min Luo, Jun-Yang, Hsuan-Ming Feng and Li-Yun Lai
4. **Interactive Hand Recognition Robot System Designs**  
Li-Yun Lai, Hsuan-Ming Feng, Wei-Sheng Zeng, Yu-Xiang Zha and Ching-Chang Wong
5. **Pareto Ensemble Pruning with Diversity**  
Pei-zhong Liu, Hong-xiang Wang, Xiao-fang Liu, Ming Hong and Hsuan-Ming Feng

#### Session 4-2

Chair: Kuan-Chou Lai, National Taichung University of Education, Taiwan

1. **Critical Task Scheduling for Data Stream Computing on Heterogeneous Clouds**  
Yen-Hsuan Kuo, Yi-Hsuan Lee, Kuo-Chan Huang, and Kuan-Chou Lai
2. **The Implementation of a Campus Air Monitoring System using LoRa Network**  
Yu-Sheng Lin, Chao-Tung Yang, Tzu-Chiang Chiang, Jung-Chun Liu and Tsung-Che Yang
3. **A Cloud Platform for Compatibility Testing of Android Multimedia Applications**  
Chien-Hung Liu
4. **Fuzzy Prediction for Time-Series Data- A Case study at Taichung City Open Data of Air Pollution**  
Wei-Sheng Huang, Tzu-Chiang Chiang, Chao-Tung Yang and Chung-Chi Lin
5. **An Exploratory Study of Multimodal Perception for Affective Computing System Design**  
Chih-Hung Wu and Bor-Chen Kuo

#### Session 4-3

The 2017 International Workshop on Emerged Soft-computing and Management Decision-making (ESMD 2017)

Chair: You-Shyang Chen, Hwa Hsia University of Technology, Taiwan

1. **Applying CARE Framework on Mobile Augmented Reality Design for Culture Learning**  
Cheng-Wei Chiang , Jing-Wei Liu , and Ling Fan

2. **Evaluating A Grammar Checker -- WhiteSmoke**  
Ya-Ling Wu
3. **Exploring Taiwanese' smartphone user intention: An integrated model of Technology Acceptance Model and Information System Successful Model**  
Ching-Hsue Cheng , Chung-Hsi Chen, Ho-Long Guo , and Chien-Ku Lin
4. **Strategic Development in the Internet Plus Era: Case study of a Taiwanese Worldwide Leading TFT-LCD Manufacturing Firm**  
Jerome Chih-Lung Chou, You-Shyang Chen and Wei-Ru Chen
5. **Expert granularity-based classifiers for identifying ERP system: Evidence-based practice of Taiwan's IC industry**  
You-Shyang Chen and Jackson White
6. **The impact of utilizing marketing power on consumer behavior in the context of Omni-channel retail sales**  
Shu-Che Chi, Cheng-Ying Chang and Cheng-Hung Chang
7. **A Novel Affective Intelligent Tutoring System**  
Guey-Shya Chen, Hui-Chien Chen and Jui-Hsing Chu

## Session 5-1

Chair: Anthony Y. Chang, Overseas Chinese University, Taiwan

1. **Research and Practice of Decision Support System in Geriatrics**  
Bih-Cheng Chen and Mong-Te Wang
2. **Applying Big Data Analysis on Remedial Program of Physical Fitness**  
Tai Lun Chan and Mong Te Wang
3. **A Symbolic Representation for Temporal Big Data**  
Anthony Y. Chang
4. **The Practical Research of the Computer-based Courses in University — —The Teaching Model of Flipped Class Based on SPOC**  
Dongmei Zhao and Xiaofan Liang
5. **Cerebral Apoplexy Image Segmentation Based on Gray Level Gradient FCM Algorithm**  
Wenai Song, Xiaoliang Du, Qing Wang, Yi Lei, Wubin Cai and Xiaolu Fei

## Session 5-2

Chair: Lin Hui, Tamkang University, Taiwan

1. **Investigation of the impact of ground pad positioning on skin burns during radiofrequency ablation treatments**  
Huang-Wen Huang, Fu-Yi Hung and Lin Hui
2. **Research of Single Domain Aspect Opinion Mining System for Online Marketing**  
Shih-Jung Wu
3. **Evaluation of IoT Supported Firefighting in the Search**  
Lin Hui, Yi-Cheng Chen, Kuei Min Wang, Chun Hong Huang, Hao-Jun You, Yi-Hsiang Chen, Chia-Hao Hsu
4. **The Design of A Learning Performance Assessment Method Based on Behavior Analysis Methodologies**

Chun-Hsiung Tseng, Jyi-Shane Liu, Lin Hui, Yung-Hui Chen, Yan-Ru Jiang, Jia-Rou Lin, Jia-Long Li and Chih-Ling Lin

5. **Developing a Mobile Learning based Game APP for English Words**

Yung-Hui Chen, Chun-Hsiung Tseng, Lawrence Deng, Fu-Yi Hung and Wei-Chen Wu

## Session 5-3

Chair: Ying-Ren Chien, National I-Lan University, Taiwan

1. **An efficient power control image processing algorithm for OLED**

Shih-Lun Chen, Jiun-Rou Chen, Wen-Xuan Zhao, Chia-Yu Lee, Chen Ying, Szu-Yin Lin, Ting-Lan Lin, Ming-Yi Lin, Jocelyn Flores Villaverde and GuanJie Fang

2. **Image-Based Noncontact Heart-Rate Measurement Method**

Yang-Han Lee , Hsien-Wei Tseng, Yu-De Liao, Chien-Da Huang, and Ting-Wei Lin

3. **Low-Complexity Tetrotlet Transform For Ultrasound Imaging Enhancement**

Chih-Hsien Hsia, Jia-Hao Yang and Jen-Shiun Chiang

4. **Software-defined Network based Bidirectional Data Exchange Scheme for Heterogeneous Internet of Things Environment**

Chao-Hsien Lee and Yu-Wei Chang

5. **Multi-Mode Halftoning using Stochastic Clustered-Dot Screen**

Yun-Fu Liu , Jing-Ming Guo , and Shih-Chieh Lin

## Session 6-1

International Workshop on Intelligent Decision Computing Paradigms and Smart Engineering Applications (IDCPSEA 2017)

Chair: Arun Kumar Sangaiah, VIT University, India

1. **Multilayer Perceptron Application for Diabetes Mellitus Prediction in Pregnancy Care**

Mário Moreira, Joel J.P.C. Rodrigues, Neeraj Kumar, Jianwei Niu and Arun Sangaiah

2. **Analysis of GLV/GLS method for elliptic curve scalar multiplication**

Yunqi Dou, Jiang Weng and Chuangui Ma

3. **An Improved Algorithm for Facial Feature Location by Mult-itemplate ASM**

Li Benfu

4. **Correlation Analysis of Climate Indices and Precipitation Using Wavelet Image Processing Approach**

Mingdong Sun, Xuyong Li and Gwangseob Kim

5. **Improvement Method of Full-scale Euler Angles Attitude Algorithm for Tail-sitting Aircraft**

Yang Liu, Hua Wang, Feng Cheng, Menglong Wang, Xiaoyu Ni

6. **A new Chaotic Map-based Authentication and Key Agreement Scheme with User Anonymity for Multi-Server Environment**

Fan Wu, Lili Xu, and Xiong Li

## Session 6-2

Chair: Neil Y. Yen, University of Aizu, Japan

1. **An empirical study on the clickbait of data science articles in the WeChat official accounts**  
Shuyi Wang and Qi Wu
2. **Object Measurement System based on Surveillance Video-images**  
Huixian Duan, Jun Wang, Lei Song and Na Liu
3. **Human Action Classification in Basketball: A Single Inertial Sensor Based Framework**  
Xiangyi Meng, Rui Xu, Xuanton Chen, Lingxiang Zheng, Ao Peng, Hai Lu, Haibin Shi, Biyu Tang and Huiru Zheng
4. **A Smartphone Inertial Sensor Based Recursive Zero-Velocity Detection Approach**  
Yizhen Wang, Xiangyi Meng, Rui Xu, Xuanton Chen, Lingxiang Zheng, Biyu Tang, Ao Peng, Lulu Yuan, Qi Yang, Haibin Shi, Xiaoyang Ruan and Huiru Zheng
5. **Heading judgement for indoor position based on the gait pattern**  
Lulu Yuan, Weiwei Tang, Tian Tan, Lingxiang Zheng, Biyu Tang, Haibin Shi, Hai Lu, Ao Peng and Huiru Zheng

## Session Fi-Award Competition

1. **Home Alone VR Game**  
Lin Hui, Shih-Jung Wu, Chun-Hsiung Tseng, Yung-Hui Chen, Yuan Hung Lee, Yu Chen Chen, Kun Ming Yu, Guan Yi Jhan, Jeng-Chung Lien
2. **Lanyang E-Guide-AR Campus Guide**  
Lin Hui, Shih-Jung Wu, Yung-Hui Chen, Chun-Hsiung Tseng, Kai-Ze Weng
3. **Exploring Marine Ecology with Virtual Reality**  
Tung-Hua Yang, Chin-Chun Chen, Ching-Chi Huang, Chao-Ming Lo, Ming-Sheng Chang, Hung-Ying Lin, Li-en Sun, Li-Heng Hsu, Hung-Ying Lin, Chien-Yin Fan
4. **The Application of Exhibit Tour: G.A.M.E. (Gamified AR / MR Entertainment) On**  
Deng-Teng Shih
5. **Chhiū-nâ — A Case Study of Vertical Screen Experimental 3D Computer Animation**  
Yung-Sheng Hsu, Yu-Fang Tu
6. **Forest & Crystal: A New Players Experience for Parkour Video Games.**  
Yi-Chun Liao, Wen-Wei He, Li-Tong Gu, Li-Sin Jhou, Kai-Hsiang Wen, Jia-Rong Lin, Ling-Hsin Tsao,
7. **A Case Study of Marker set Configuration for the motion capture of Bā Jiǎ Jiāng performance**  
Yung-Sheng Hsu, Li-o Chen

## Session 7-1

### International Workshop on Intelligent Decision Computing Paradigms and Smart Engineering Applications (IDCPSEA 2017)

Chair: Arun Kumar Sangaiah (VIT University, India)

1. **A Novel Lightweight PUF-based RFID Mutual Authentication Protocol**  
Wei Liang, Songyou Xie, Xiong Li, Jing Long, Yong Xie, Kuan-Ching Li
2. **Comparison of Similarity Measures in Collaborative Filtering Algorithm**  
Jing Wang



3. **Study of CR based U-LTE Co- existence under varying Wi-Fi Standards**  
A.C. Sumathi, M. Akila and S. Arunkumar
4. **Hybrid Intelligent Bayesian Model for Analyzing Large Spatial**  
Velmurugan J and M Venkatesan
5. **Design and performance characterization of practically realizable graph-based security aware algorithms for hierarchical and non-hierarchical cloud architectures**  
Kale Rahul Vishwanath, Bharadwaj Veeravalli and Xiaoli Wang

## Session 7-2

Chair: Lin Hui, Tamkang University, Taiwan

1. **Data explosion model for public safety data processing and its application in a unified security system**  
Pan Gao, Zheng Xu, Di Gao
2. **Intelligent video analysis technology of public security standard sets of data and measurements**  
Huan Du, Zheng Xu, Zhiguo Yan
3. **The Analysis of the Cyberspace Security using Immune Factors Network Algorithm**  
Zheng Xu, Yuan Tao, and Jun Ye
4. **The Police Application and Developing Direction of UAV**  
Qianjin Tang and Zheng Xu
5. **The Study on Verification Systems of Face and ID Card for Public Security**  
Zhiguo Yan and Zheng Xu

## Conference Venue

The 6th International Conference on Frontier Computing (FC 2017) - Theory, Technologies and Applications will be held at the ABENO HARUKAS, Tennoji, Osaka.



### **ABENO HARUKAS**

ABENO HARUKAS — Japan's highest building of 300m  
A multifaceted Urban Gem with All the Cutting-Edge Amenities of the City  
Towns filled with the vivacity of the people who gather, live, and learn there, while experiencing timeless stories of history, culture and nature.

### **Services and Facilities**

B2F/1F

Kintetsu Ōsaka-Abenobashi Station

B2–14F

Kintetsu Department Store Main Store Abeno Harukas

16F

ABENO HARUKAS Art Museum

17-18F/21–36F

Office floors

19-20F/38–55F/57F

Osaka Marriott Miyako Hotel

58-60F

HARUKAS 300(Observatory)

The 58th floor is the open-air outdoor plaza in a three-story atrium structure with pleasant sunlight and wind.

The 60th floor – the top floor - is a 360° glass-enclosed observation deck that commands a panoramic view of Osaka Plain.

For details, view the website:

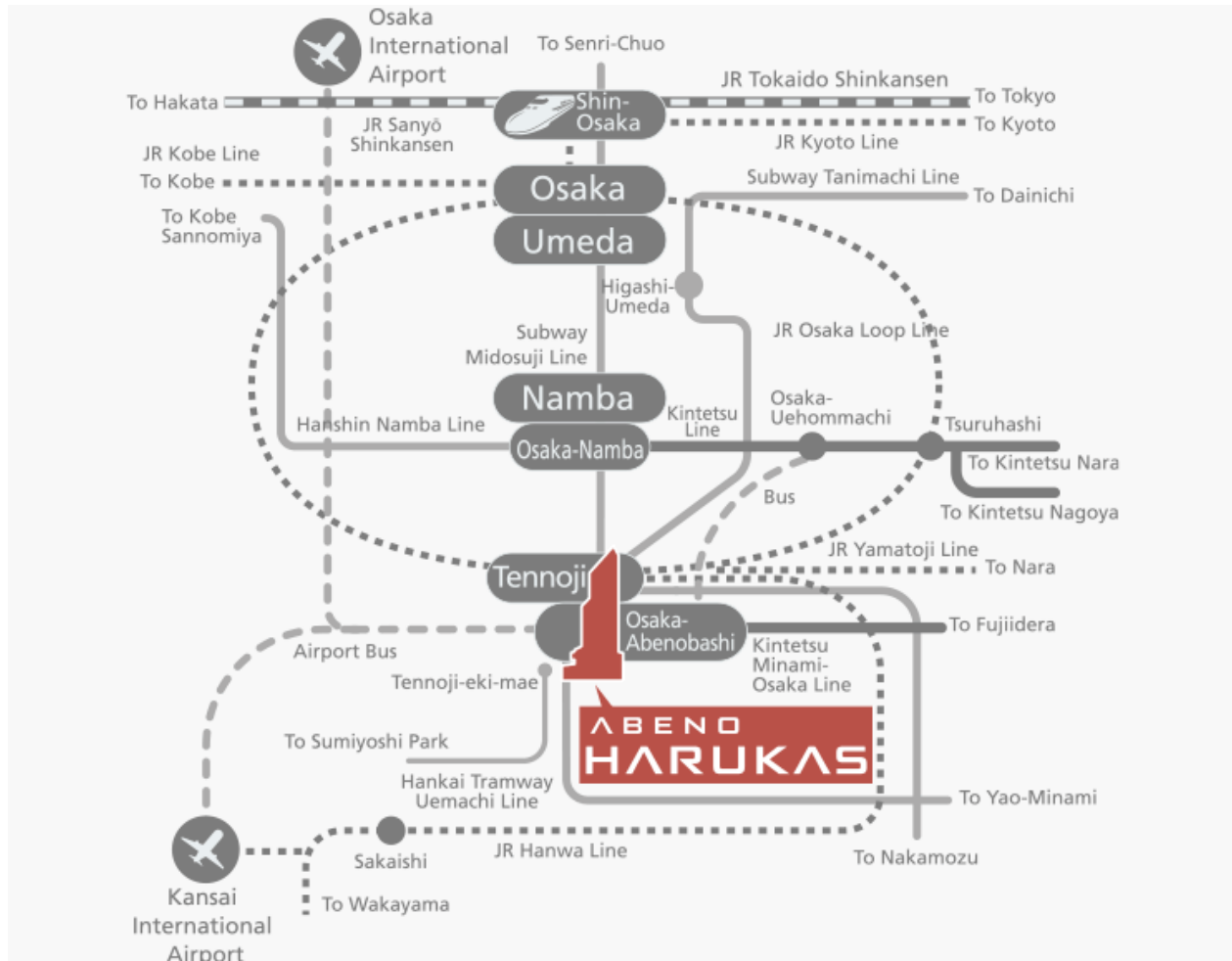
<http://www.abenoharukas-300.jp/en/observatory/>

## Map

Directly above Ōsaka-Abenobashi Station

Direct access to Kansai International Airport,

Osaka International Airport, Umeda and Shin-Ōsaka.



Kansai Airport	Approx. 30 minutes JR Hanwa Line Tennoji ~ Kansai Airport
Osaka Airport	Approx. 55 minutes Airport Limousine Bus
Osaka Airport	Approx. 30 minutes Airport Limousine Bus
Shin-Osaka	Approx. 21 minutes Subway Midosuji Line Tennoji - Shin-Osaka
Umeda	Approx. 15 minutes Subway Midosuji Line Tennoji ~ Umeda
Namba	Approx. 6 minutes Subway Midosuji Line Tennoji ~ Namba
Kobe(Sannomiya)	Approx. 36 minutes JR Osaka Loop Line Tennoji change trains at Osaka, JR Kobe Line Osaka ~ Sannomiya
Kyoto	Approx. 43 minutes JR Osaka Loop Line Tennoji change trains at Osaka, JR Kyoto Line Osaka ~ Kyoto
Nara	Approx. 33 minutes JR Yamatoji Line Tennoji ~ Nara
Wakayama	Approx. 43 minutes JR Hanwa Line Tennoji ~ Wakayama



# **HOTEL INFORMATION**

## **Tennoji**

### **APA Hotel Tennouji-Ekimae**

#### **Access :**

##### **By Train**

It is immediate from Osaka municipal subway / Midosuji Line, Tanimachi Line "Tennoji Station" 5 exit

It is a 2-minute walk from each JR line / "Tennoji Station" south exit

It is a 2-minute walk from Kintetsu South Osaka Line / "bridge Eki of Abe" Four Devas Teraguchi

##### **Airport**

It is approximately 30 minutes with limousine from Osaka (Itami) Airport

It is JR high speed approximately 50 minutes from Kansai Airport

#### **MAP :**



**Web :** [http://www.apahotel.com.e.ju.hp.transer.com/language/kansai/05\\_tennouji-ekimae.html](http://www.apahotel.com.e.ju.hp.transer.com/language/kansai/05_tennouji-ekimae.html)

## Toyoko Inn Osaka Abeno Tennoji & Hospital Inn Ichidai-byoin Mae

### Access :

#### By Train

5 minutes walk from Tennoji Station on JR or Midosuji/Tanimachi Subway Line.

4 minutes walk from Dobutsuen-mae Staion on Midosuji/Sakaisuji Subway Line.

### MAP :



**Web :** [http://www.toyoko-inn.com/e\\_hotel/00247/index.html](http://www.toyoko-inn.com/e_hotel/00247/index.html)



Web : <http://ct.rion.mobi.e.pp.hp.transer.com/trusty.osakaabeno/>

## Toyoko Inn Osaka Shinsaibashi Nishi

### Access :

#### By Train

1 minute walk from the No.4 exit of Yotsubashi Station on the subway Yotsubashi Line

8 minutes walk from the No.8 exit of Shinsai-bashi Station on the Subway Midosuji

Line.

### MAP :



Web : [http://www.toyoko-inn.com/e\\_hotel/00247/index.html](http://www.toyoko-inn.com/e_hotel/00247/index.html)

## Shin Osaka

### Shin Osaka Station Hotel

### Access :

#### By Train

4 min. walk from JR Shin-Osaka Station (East gate)

8 min. walk from Shin-Osaka Station on Subway Midosuji Line

### MAP :





Web : <http://www.st-hotel.jp/honkan/english/>

## Toyoko Inn Shin-osaka Chuo-guchi Shinkan

### Access :

#### By Train

5 minutes walk from the main exit (on the 1st floor of Shomenguchi) of JR Shin Osaka Station.

5 minutes walk from the No.1 exit of Nishinakajima Minamikata Station on Midosuji Subway Line.

### MAP :



Web : [http://www.toyoko-inn.com/e\\_hotel/00091/index.html](http://www.toyoko-inn.com/e_hotel/00091/index.html)