International Conference on Frontier Computing

Special Forum on AI&Blockchain in Healthcare

FC_ABH 2019

Final Program

JANUARY 19-21

TAICHUNG, TAIWAN

International Conference on Frontier Computing
Special Forum on AI&Blockchain in Healthcare

(FC_ABH 2019)

Taichung, Taiwan
January 19-21, 2019

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, 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), FC2016 (Tokyo, Japan), FC2017 (Osaka, Japan), and FC2018 (Kuala Lumpur, Malaysia). 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 Taiwan. Thanks are also due to the many experts who contributed to making the event a success.

January 2019

Jason C. Hung, National Taichung University of Science and Technology, Taiwan
Neil Y. Yen, The University of Aizu, Japan

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Organization

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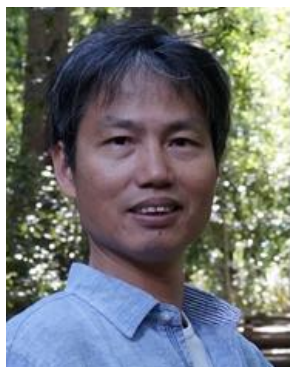Zheng Xu, Shanghai University, China

Day 1 January 19, 2019 (Saturday)

11:00~13:20	**Registration**
13:20~13:30	**Opening**
13:30~15:00	**Room: International Hall** Keynote Speak I: Prof. Qun Jin Chair: Prof. Hsiu-Mei Huang
15:00~15:10	Coffee Break
15:10~16:10	**Room I** Session 1-1	**Room II** Session 1-2
16:10~17:40	**Room: International Hall** Keynote Speak II: Prof. Yan Pei Chair: Prof. Hung-Yi Lin
17:40~	**Dinner**

Day 2 January 20, 2019 (Sunday)

10:00~11:30	**Room I** Keynote Speak III: Prof. Neil Y. Yen Chair: Prof. Min-Hsuan Fan
11:30~13:00	Lunch
13:00~14:30	**Room I** Session 2-1	**Room II** Session 2-2
14:30~14:50	Coffee Break
14:50~16:00	**Room I** Session 3-1	**Room II** Session 3-2
16:00~17:30	**Room I** Keynote Speak IV: Prof. Hwa-Young Jeong Chair: Prof. Jeanne Chen
18:00~	Banquet

# Day 3 January 21, 2019 (Monday)	
10:00~12:00	Conference Group Discussion Panel Talk
12:00~13:00	Coffee Break

Keynote Speaker

Qun Jin
Professor of Networked Information Systems,
Department of Human Informatics and Cognitive Sciences,
Faculty of Human Sciences,
Waseda University,
Japan.

Enable Privacy-Enhanced Sustainable Use of Personal Health Data by Blockchain

Abstract

In recent years, emerging technologies, such as big data, Internet of Things (IoT), and artificial intelligence (AI), enable and empower personalized smart services, such as healthcare and lifelong learning, to enhance quality of life (QoL) and promote well-being for all of the people. In this talk, after introducing basic concept on data driven personal analytics and unified individual modeling for personalized smart services, our vision and work on a human-centric framework for privacy-enhanced sustainable use of personal health data with blockchain will be addressed and explained. Furthermore, applications of data-driven personalized smart services in healthcare and living support for the elderly as well as opportunities and issues will be described and discussed.

Biography

Qun Jin is a Full Professor at the Networked Information Systems Laboratory, Department of Human Informatics and Cognitive Sciences, Faculty of Human Sciences, Waseda University, Japan. He is currently the Dean of Graduate School of Human Sciences. He has been extensively engaged in research works in the fields of computer science, information systems, and social and human informatics. His recent research interests cover human-centric ubiquitous computing, behavior and cognitive informatics, big data, personal analytics and individual modeling, intelligence computing, blockchain, cyber security, cyber-enabled applications in healthcare, and computing for well-being. He is a senior member of Association of Computing Machinery (ACM), Institute of Electrical and Electronics Engineers (IEEE), and Information Processing Society of Japan (IPSJ).

Keynote Speaker

Yan Pei
Associate Professor
School of Computer Science and Engineering, the University of Aizu
Graduate School of Computer Science and Engineering, the University of Aizu
Japan

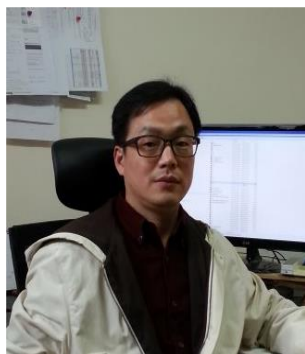## Optimization Using Evolutionary Computation

Abstract

In computer science, evolutionary computation is a family of algorithms for global optimization inspired by biological evolution, and the subfield of artificial intelligence and soft computing are studying these algorithms. In technical terms, they are a family of population-based trial and error problem solvers with a metaheuristic or stochastic optimization character. Enhancing search capability of evolutionary computation (EC) and improving its optimization performance are important research subject in EC community. EC is applicable to high dimensional, non-linear, non-differentiable, and other hard problems. However, obtaining an optimal performance is still difficulty for EC applications. For example, user fatigue is a serious issue of applying interactive EC (IEC), and reducing fatigue is a practical requirement for its application. As implementing an efficient search method in EC algorithm is one of the methods for reducing user fatigue, it is valuable to study some efficient search methods in EC. In this lecture, we will discuss about six novel approaches on this subject and discuss them within three research directions. They are: (1) approximating fitness landscape in lower dimensional search space and elite local search, (2) Fourier analysis on fitness landscape and its enhancement methods, (3) Fourier niche method for multi-modal optimization, (4) triple and quadruple comparison-based interactive differential evolution (IDE) and differential evolution (DE), (5) EC acceleration by the accelerating transition from exploration to exploitation, and (6) a new EC algorithm - chaotic evolution.

Biography

Yan Pei was born in Shenyang, China. He obtained Doctor of Engineering at Kyushu University, Fukuoka, Japan. He received the B.Eng. and M.Eng. degree from Northeastern University, Shenyang, China. He was a software engineer and software projector manager in Chinese and German IT industries for several years before entering academic society. He is currently working at the University of Aizu as an Associate Professor. His research interests include Evolutionary Computation, Machine Learning, and Software Engineering. He is a member of IEEE SMC, IEEE CIS and Japanese society for evolutionary computation.

Keynote Speaker

Hwa-Young Jeong
Professor
Kyung Hee University
Seoul, Korea

Toward Software-centric Society

Abstract

Software is becoming an essential tool for many people to live and work. In addition, software is no longer a professional field of study, but a part of life. Dr. Jeannette Wing who was Corporate Vice President of Microsoft Research pointed out Computational thinking is not only limited to computer scientists, but has become a fundamental technology for everyone to read, write, and compute. This trend is spread to the world. That is, students who are studied to not related with computer science such as literature, arts, and society should also be thinking about software and its processing. What happens to them? Do you think it is necessary for those people? The answer can be about convenience for human being and efficiency for people's works. The reason can be make needs for human. We are living in high performance life and fast communication now.

Biography

Prof. Jeong received the Ph.D of computer engineering in 2004 from Kyung Hee University, Korea. Currently, he is a full professor in Humanitas College of Kyung Hee University, Seoul, South Korea. He is a member of the Standard Words Committee in Ministry of Information and Communication, Republic of Korea. And he has worked on the editorial board for the journal of Korea Society for Internet Information from 2004. From 1994 to 1999, he worked for Aju System Co., and CNA Research Inc., as a system and software engineer, and he had made GUI (Graphical User Interface) programs to control the semiconductor testing machine which was called IC Test Handler. He was an assistant professor, Dept of E-Business of Yewon Art University in 2000~2005. He worked Telecommunication's Standard Word Committee member of Telecommunications Technology Association, Korea, from 2008 to 2017. From 2003 to 2004, he was an editor for Korea Contents Association Letters. And he was an editor for Korea Society for Internet Information Journal, from 2004 to 2007. He is a chair of Scientific Committee and vice chair of international journal committee, KIIT, and he is vice president of KIITI too. And he is working for an advisory committee of Dongdaemun-gu Ward Office, Seoul city. He has served for many international conferences/workshops as an International Program Committee Chair from 2012 to now. His research area includes design of system software, multimedia system and software, software and application with security, e/u-learning system and so on.

Keynote Speaker

Neil Y. Yen
Associate Professor
School of Computer Science and Engineering,
the University of Aizu
Graduate School of Computer Science and
Engineering, the University of Aizu
Japan

Emergence in Sharing Economy and its applications - A Review on Airbnb

Abstract

Sharing economy becomes an emerging issue in urban life. It is not a new phenomenon but an assembling of existing techniques to meet specific demands of users. It also points out a better way to implicitly collect users' contexts and to understand users than the conventional one that requires much user involvement (e.g., tedious inputs). This talk will provide a glance of sharing economy and its applications. In addition, we will walk you through a bulk of instances, mainly including the works in sentiment analysis, user analysis and trend analysis, that we have done in the field.

Biography

Neil Y. Yen received Ph.D. degrees at Department of Human Informatics and Cognitive Sciences, Waseda University, Japan and Department of Computer Science and Information Engineering, Tamkang University, Taiwan in year of 2012 respectively. He is currently an associate professor at School of Computer Science and Engineering, University of Aizu, Japan. His current interests include Human-centric Computing (i.e., user modeling and understanding, social web, collaborative economy), Big Data (i.e., data/web mining, deep learning, statistical analysis), and Anticipatory Computing (i.e., prediction, recommendation, and well-being services). He has published more than 100 articles. In addition to the research achievement, Dr. Yen serves as Editor-in-Chief of International Journal of Social and Humanistic Computing (Inderscience), as Associate Editors of Open Journal of Big Data, International Journal of Big Data Intelligence, Journal of Software, and more than 30 times as Guest Editors on international journals with high impact factors. Dr. Yen is also serving as Steering Chair of Frontier Computing conference series sponsored by IET, U.K. to publicize emerging research topics in the field. He also served as organizing chairs or committee members for more than 50 international conferences sponsored by IEEE/ACM/IET.

Day 1
January 19, 2019
15:10~16:10

Session 1-1

Chair: Dr. Wen-Yen Lin, National Taichung University of Science and Technology, Taiwan

1. **Wall Cladding Anomaly Detection by Supervised Machine Learning on Drone Thermograph**
   Wen-Yen Lin, Min-Chih Chen and Shih-Kuan Liao
2. **Applying Hyperledger on Electronic Medical Record System**
   Wen-Yen Lin and Ting-En Huang
3. **A Multi-hop Distributed Energy-Efficient Clustering Using Fuzzy Logical Control with Sub-Clustering for Healthcare Wireless Sensor Networks**
   Young-Long Chen, Li-Hsien Chang and Zong-Yi Lin
4. **Veracity Model of Streaming XML Document**
   Shih-Ying Chen and Cheng-Fu Ji
5. **Comparing the Performance of Feature Selection Algorithms For Wart Treatment Selection**
   Roohallah Alizadehsani, Moloud Abdar, Seyed Mohammad Jafar Jalali, Mohamad Roshanzamir, Abbas Khosravi and Saeid Nahavandi

Session 1-2

Chair: Dr. Yan Pei, Aizu University, Japan

1. **Optimization Using Evolutionary Computation**
   Yan Pei
2. **Method for the Initial Value of Weights to Obtain Stable Results of Unsupervised Neural Network**
   Seongchul Park, Sanghyun Seo, Changhoon Jeong and Juntae Kim
3. **Self-obesity Diagnosis Model using Human Body Index based on Datamining Methodology**
   Changgyun Kim, Seunghyun Choi and Sekyoung Youm
4. **Deep Learning Model of Chronic Disease Prediction using Healthcare Big Data**
   Changgyun Kim, Hyein Kim, Heajong Joo and Sekyoung Youm
5. **An Effective Digitized GPS Signal Transmission for High Temporal Precision IoT Services**
   Bum-Soo Park and Seung-Hee Kim

Day 2
January 20, 2019
13:00 – 14:30

Session 2-1

Chair: Dr. Hwa-Young Jeong, Kyung Hee University, Seoul, Korea

1. **Novel Heterogeneous Recommender using Deep Representations for Music Streaming Services**
   Yuan-Hao Chan, Jia-Wei Chang, Hung-Min Sun and Ching-Yi Chiu
2. **Smart Searching via Semantic Network for Healthcare Application**
   Chih-Kun Ke and Mei-Yu Wu
3. **A Study on the VR/AR Visual Language Education Platform based on Deep Learning**
   Hae-Jong Joo and Hwa-Young Jeong
4. **Short Research on Architecture for Mobile Content Delivery Services in Streaming Stored Audio/Video**
   Tae-Kook Kim

Session 2-2

Chair: Dr. Yu-Wei Chan, Providence University, Taiwan

1. **Provenance Compression Scheme for Managing Large RDF Documents**
   Kyoungsoo Bok, Jongtae Lim, Jieun Han and Jaesoo Yoo
2. **In-Memory Caching for Improving Graph Query Processing**
   Jaesoo Yoo, Kyoungsoo Bok, Dojin Choi and Seunghun Yoo
3. **Fast Mean Shift Algorithm using Directional Cache-based Density Estimation**
   Kwontaeg Choi, Sunwha Kim and Sunjin Yu
4. **Approving Three Edge Pattern-based Path Prediction Algorithm for Predictive Information Service**
   Sukhoon Lee

Day 2
January 20, 2019
14:50~16:00

Session 3-1

Chair: Dr. Tien-Chi Huang, National Taichung University of Science and Technology, Taiwan

1. **A Preliminary Study on Whether M&A Information is Useful to Predict Promising Industries**
   Jinho Choi, Sunghun Chung and Yong Sik Chang
2. **The Effect of Regulatory Focus on Ethical Behavior in the Context of Green Credit Card Services**
   Moon-Yong Kim
3. **The Relationship between External Financing Needs and Firm Value: The Role of Corporate Governance and Corporate Social Responsibility**
   Ya-Hsueh Chuang, Tsan-Ching Kang and Pei-Yi Chen
4. **A Semi-Supervised Technique for LGA Prognosis**
   Faheem Akhtar, Jianqiang Li, Yan Pei and Azeem Muhammad
5. **QCA Reversible Logic Structure Using Multi-layer**
   Jun-Cheol Jeon

Session 3-2

Chair: Dr. Jia-Wei Chang, National Taichung University of Science and Technology, Taiwan

1. **Abstract Robotic Arm Application with Kinect2 Limb Identification with NEXCOM Minibot as an Example**
   Sheng-Kai Chen, You-Ting Su, Cheng-Yi Lin and Lai-Chung Lee
2. **Control methods of meta-data to utilize the block-chain of IoT Environments**
   Youn-A Min, Tae-Mu Chang and Jin-Mook Kim
3. **Using MRA-agent for Multimedia Big Data Interoperability in Could Computing Environments**
   Sung-Uk Choi, Jin-Mook Kim and Seok-Jae Moon
4. **A Study on Journaling-Metadata Management based on Modified Htree**
   Youn-A Min and Jin-Mook Kim

Conference Venue

2019 International Conference on Frontier Computing – Special Forum on AI&Blockchain in Healthcare will be held at the **International Conference Hall, National Taichung University of Science and Technology**, Taichung, Taiwan.

National Taichung University of Science and Technology: The International Conference Hall No. 129, Section 3, Sanmin Road, North District, Taichung City, 404
國立臺中科技大學：臺中市北區三民路三段 129 號國際會議廳

There are two detail routs from Taoyuan Airport and Songsan Airport to venue.

1. **Songsan Airport Detail Rout:**
   http://fronticomp.com/FUTECH2018/songshanairport.pdf
2. **Taoyuan International Airport Detail Rout:**
   http://fronticomp.com/FUTECH2018/taoyuaninternationalairport.pdf
3. **Taoyuan Metro:**
   https://www.tymetro.com.tw/tymetro-new/en/index.php
4. **Taipei eBus:**
   https://ebus.gov.taipei/
5. **Taiwan Railways Administration:**
   http://twtraffic.tra.gov.tw/twrail/EN_QuickSearch.aspx
6. **Taiwan High Speed Rail:**
   http://www.thsrc.com.tw/index_en.html

Where to Make Contact

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