

**2017 5th International Conference on  
Applied Computing and Information  
Technology / 4th International Conference  
on Computational Science/Intelligence and  
Applied Informatics / 2nd International  
Conference on Big Data, Cloud  
Computing, Data Science & Engineering  
(ACIT-CSII-BCD 2017)**

**Hamamatsu, Japan  
9 – 13 July 2017**



**IEEE Catalog Number: CFP17E45-POD  
ISBN: 978-1-5386-3303-8**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP17E45-POD
ISBN (Print-On-Demand):	978-1-5386-3303-8
ISBN (Online):	978-1-5386-3302-1

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

2017 5th Intl Conf on Applied  
Computing and Information  
Technology/4th Intl Conf  
on Computational  
Science/Intelligence  
and Applied Informatics/2nd  
Intl Conf on Big Data, Cloud  
Computing, Data Science &  
Engineering

# ACIT-CSII-BCD 2017

## Table of Contents

<b>Message from ACIT 2017 Conference Chair</b> .....	xii
<b>Message from ACIT 2017 Program Chair</b> .....	xiii
<b>ACIT 2017 Conference Organization</b> .....	xiv
<b>ACIT 2017 Program Committee</b> .....	xv
<b>Message from CSII 2017 Conference Chair</b> .....	xvi
<b>Message from CSII 2017 Program Chair</b> .....	xvii
<b>CSII 2017 Conference Organization</b> .....	xviii
<b>CSII 2017 Program Committee</b> .....	xix
<b>Message from BCD 2017 Conference Chair</b> .....	xx
<b>Message from BCD 2017 Program Chair</b> .....	xxi
<b>BCD 2017 Conference Organization</b> .....	xxii
<b>BCD 2017 Program Committee</b> .....	xxiii
<b>Keynote - Performance Impact of Data Locality in MapReduce on Hadoop</b> .....	xxiv

---

# ACIT 2017

## Regular Papers

Toward a Statistical Analysis of Computer Daihinmin .....	N/A
<i>Seiya Okubo, Yuuta Kado, Yamato Takeuchi, Mitsuo Wakatsuki, and Tetsuro Nishino</i>	
Computing Skyline Using Taxicab Geometry .....	7
<i>Partha Ghosh, Takaaki Goto, and Soumya Sen</i>	
Spatio-Temporal Validation of AIRS CO2 Observations Using HIPPO, TCCON and GEOS .....	N/A
<i>Hui Yang, Hao Yang, Yunjing Xu, Yong Qin, and Songnian Li</i>	
Automated Risk Identification of CMMI Project Planning Using Ontology .....	19
<i>Chanapan Rojrattanakorn and Wiwat Vatanawood</i>	
Knowledge Engine for Robots Using Ontology .....	25
<i>Khan Md. Anwarus Salam and Asim Munawar</i>	

## Special Session 1: Social Systems Science & ICT

A Concept Proposal on Modeling of Security Fatigue Level .....	29
<i>Shigeaki Tanimoto, Keita Nagai, Kenichiro Hata, Takashi Hatashima, Yasuhisa Sakamoto, and Atsushi Kanai</i>	
Enhancing Network Connectivity Supporting Next Generation Smart Society .....	35
<i>Yoshiko Sueda and Arata Koike</i>	
A Key Factor of ICT-related New Service Design .....	41
<i>Motoi Iwashita</i>	

## Special Session 2: Technology for Social Welfare

Heart Rate and Heart Rate Variability Measuring System by Using Smartphone .....	47
<i>Muhammad Khairul Nizar Bin Khairuddin, Kazuhiro Nakamoto, Hiroshi Nakamura, Kanya Tanaka, and Shota Nakashima</i>	
Voice Recognition and Information Transmission System for Hearing Impaired People .....	53
<i>Kosuke Ando, Seiichi Serikawa, and Yuhki Kitazono</i>	
Development of the Programmable Suspension .....	59
<i>Hiroki Hanamori and Keiichi Yoshino</i>	
Development of Hand-Held Digital Effector Using Touch Sensor .....	65
<i>Koki Minamoto and Keiichi Yoshino</i>	

## Special Session 3: Practical Learning in Applied Computing

Experiment and Evaluation of Effective Grouped Flipped Classroom .....	N/A
<i>Katsuyuki Umezawa, Manabu Kobayashi, Takashi Ishida, Makoto Nakazawa, and Shigeichi Hirasawa</i>	
Development of "Concrete" Educational Materials for Mathematics on Tablet PCs .....	77
<i>Ken-ichi Fujii, Kazuki Hayashida, Nobuhisa Yamazaki, Ayumu Koga, and Masaru Miyamoto</i>	
Study of a Multilingual Translation Process Using Statement Restriction Rules .....	81
<i>Yuu Nakajima, Kana Tajima, Yoshiyuki Kitajima, and Reiko Hishiyama</i>	
A Learning Material for Physics Experiment with High-Accuracy Using Computer Vision Technique .....	86
<i>Gen Nakagawa and Ken-ichi Fujii</i>	

## CSII 2017

### Regular Session

An Intelligent Noninvasive Taste Detection App for Watermelons .....	90
<i>Yu-Shan Cheng, Shun-Chung Wang, Yu-Hua Liu, and Bo-Ruei Peng</i>	
Accurate Reliability Estimation Based on the Collection of First-Order Subsystems in the Bubblesort Network .....	95
<i>Tzu-Liang Kung and Chun-Nan Hung</i>	
Robot to Stimulate 3D Movements on MEMS Magnetic Integrated Circuits .....	N/A
<i>Surulivel Prasath</i>	
A Particle Swarm Optimization Based Energy Management Strategy for Hybrid Generation System .....	104
<i>Yu-Shan Cheng, Yi-Hua Liu, Shun-Chung Wang, and Bo-Rei Peng</i>	
A Novel Hybrid Computational Intelligence Approach for Solving General Constrained Global Optimization Problems .....	109
<i>Jui-Yu Wu</i>	
The Arcs Fault-Tolerance for 4-Pancyclic Properties of Unidirectional Hypercubes .....	115
<i>Chun-Nan Hung, Tzu-Liang Kung, Lih-Hsing Hsu, Kevin Chen, and Shi Zhe Lai</i>	
Security Risk Management in Online System .....	119
<i>Arwa Alsalamah</i>	
Intrusion Detection System Based on Gaussian Mixture Model Using Hadoop Framework .....	125
<i>Zhijian Wang and Yanqin Zhu</i>	

A Study on the Psychological Characteristics of College Student Athletes .....	N/A
<i>Naoya Sekine, Koichiro Aoki, and Chieko Kato</i>	
The Research and Design of the Proxy for Certificate Validation Based on Distributed Cross-Certification .....	135
<i>Yan Liu and Zhe Yang</i>	
 Special Session 1: The 1st International Workshop on Frontier of Information Sciences and Arts (FoISA-2017)	
Prototyping Sports Mental Cloud .....	141
<i>Xu Gao, Minoru Uehara, Koichiro Aoki, and Chieko Kato</i>	
 Special Session 2: The 1st International Workshop on Psycho-Informatics and Sports Informatics	
Measurement of Focus on Drawings by Eye-Tracker: Comparison between Experts and Non-experts .....	N/A
<i>Hideo Shibutani, Koichiro Aoki, Fumiko Goto, and Chieko Kato</i>	
A Study of Incident Mechanisms in Flow Trials .....	N/A
<i>Takuya Ozaki, Chieko Kato, and Yoshiomi Otsuka</i>	
Factors of Conversation Satisfaction and its Relevance .....	N/A
<i>Tomohiro Yamashita, Chieko Kato, Toru Sugahara, and Koichiro Aoki</i>	
The Relationship between Athletes Personality and Baum Test .....	N/A
<i>Natsumi Yamagata and Yoshinori Watanuki</i>	
Accessing the "Other Side" through Technology: The Case of Ōe Kenzaburō's Torikaeko .....	N/A
<i>Matthew C. Strecher, Chieko Kato, Fumiko Goto, and Kensei Tsuchida</i>	
A Study of the Relationships between the Personality Inventory, the Projection Method, and Performance Testing: Examination through Quantitative Analysis .....	N/A
<i>Chieko Kato, Toru Sugahara, Koichiro Aoki, and Hideo Shibutani</i>	
Footprint of Emotions That Remain in Facial Features: The Influence of Emotion and Facial Expression is Given to the Complexion .....	N/A
<i>Masami Miyazaki, Toru Sugahara, Naoko Orihara, and Shinji Umezawa</i>	
Evaluation of Differences in Influence of Spontaneous Laughter and Forced Laughter on Autonomic Nerves .....	N/A
<i>Ryuma Onose, Toru Sugahara, Yoshiomi Otsuka, Chieko Kato, and Masami Miyazaki</i>	
On the Use of Famous Phrases for the Enhancement of an Athlete's Attitude and Mental Conditioning .....	N/A
<i>Yasutaka Okamoto, Toru Sugahara, Yoshinori Watanuki, and Chieko Kato</i>	

Impact of Synchronous Expression of Smiling on Interpersonal Behavior and Appeal Evaluation .....	N/A
<i>Keisuke Ando, Waka Ibaragi, Toru Sugahara, and Masami Miyazaki</i>	
Depth Recognition in 3D Translucent Stereoscopic Imaging of Medical Volumes by Means of a Glasses-Free 3D Display .....	190
<i>Yurina Kitaura, Kyoko Hasegawa, Yuichi Sakano, Roberto Lopez-Gulliver, Liang Li, Hiroshi Ando, and Satoshi Tanaka</i>	
Sports Reporting in the Osaka-Mainichi Shinbun at the Turn of the Twentieth Century: From the Quantitative Analysis of Articles Related to Specific Sports Events .....	N/A
<i>Yoshinori Watanuki and Koichiro Aoki</i>	
 <b>Special Session 3: Cultural Informatics of Japan and Engineering of Intercultural Understanding</b>	
The Realization of 3D Modeling System for Japanese Origami .....	198
<i>Risa Ogawa and Takayuki Fujimoto</i>	
 <b>Special Session 4: Computational Intelligent Systems</b>	
Cost Reduction of Creating Likelihood Map for Automatic Polyp Detection Using Image Pyramid .....	204
<i>Tsubasa Ooto, Hiroyasu Usami, Yuji Iwahori, Aili Wang, Naotaka Ogasawara, and Kunio Kasugai</i>	
 <b>Special Session 5: Cooperative Autonomous and Intelligent Systems</b>	
Automatic Classification of Remarks in Werewolf BBS .....	210
<i>Takanori Fukui, Keisuke Ando, Toshihide Murakami, Nobuhiro Ito, and Kazunori Iwata</i>	
 <b>Special Session 6: Intelligent Systems for Application</b>	
Characterization and Generation of Threshold Functions Based on Nearest Neighbor Relations .....	216
<i>Naohiro Ishii, Ippei Torii, Kazunori Iwata, Kazuya Ogagiri, and Toyoshiro Nakashima</i>	
Application of Asymmetric Networks to Motion Detection and Generating Independent Subspaces .....	222
<i>Naohiro Ishii, Toshinori Deguchi, Masashi Kawaguchi, and Hiroshi Sasaki</i>	

## BCD 2017

### Regular Session

Multi-node Big Data VM Platform and Job Submission Portlet .....	228
<i>Chien-Heng Wu, Wen-Yi Chang, Whey-Fone Tsai, Franco Lin, Ching-Fang Lee, and Chao-Tung Yang</i>	
Visualizing Shiga Prefecture Using RESAS: Cloud-Based Analysis System with Government Open Big Data .....	N/A
<i>Jongchan Lee, Tetsuto Himeno, Shohei Shimizu, Takuma Tanaka, and Akimichi Takemura</i>	
A Survey on Big Data Pre-processing .....	241
<i>Zhibin Guan, Tongkai Ji, Xu Qian, Yan Ma, and Xuehai Hong</i>	
Investigation of Coding Violations Focusing on Authorships of Source Files .....	248
<i>Aji Ery Burhandenny, Hirohisa Aman, and Minoru Kawahara</i>	
An Empirical Study on Relationships between Comments and Design Properties .....	254
<i>Yuto Miyake, Sousuke Amasaki, Tomoyuki Yokogawa, and Hirohisa Aman</i>	
Empirical Study of Fault-Prone Method's Name and Implementation: Analysis on Three Prefixes-Get, Set and Be .....	260
<i>Sho Suzuki, Hirohisa Aman, and Minoru Kawahara</i>	
Supervised-Topic-Model-Based Hybrid Filtering for Recommender Systems .....	266
<i>Mimu Kawai, Takayuki Shiohama, and Hiroyuki Sato</i>	
A Weight-Based Data Pre-processing Mechanism for Improving the Accuracy of the Massive Traffic Flow Prediction .....	272
<i>Hong-Yi Chang, Yu-Fong Wu, Tu-Liang Lin, Wan-Kun Chang, and Shih-Che Hsu</i>	
Visualize the Longitudinal Big Text Data with a Binary Covariate: An Approach Based on Keyword's Frequency .....	N/A
<i>Shizue Izumi, Tetsuji Tonda, Noriyuki Kawano, and Kenichi Satoh</i>	
A Rapid Incremental Frequent Pattern Mining Algorithm for Uncertain Data .....	284
<i>Tu-Liang Lin, Bo-Wei Wen, Hong-Yi Chang, Wan-Kun Chang, and Shih-Che Hsu</i>	
Global and Local Bursts Detection in Streaming Data .....	289
<i>Phyu Phyu Khaing and Than Nwe Aung</i>	
Performance Anomaly Detection Using Datacenter Landscape Graphs .....	295
<i>Olumuyiwa Ibidunmoye, Thijs Metsch, Victor Bayon-Molino, and Erik Elmroth</i>	
An Identification Method of IR Signals to Collect Control Logs of Home Appliances .....	303
<i>Yuta Takahashi and Teruhiro Mizumoto</i>	



Detection of Parkinson Disorder Using Kinect Arm Movement - A Computational Based Approach .....	309
<i>Sagarjit Dash and Ashutosh Mishra</i>	
Two-Mode Three-Way Dominance Points Model for Periodic Dissimilarity .....	314
<i>Jun Tsuchida and Hiroshi Yadohisa</i>	
Generalized Structured Component Analysis for Dissimilarity Data and Multivariate Data .....	320
<i>Kensuke Tanioka and Hiroshi Yadohisa</i>	
 <b>Special Session 1: Data Engineering in Practice</b>	
Is Cutting-Edge Software Engineering Attractive for Developers in SMEs? .....	326
<i>Yukasa Murakami and Masateru Tsunoda</i>	
Analyzing Execution Traces of Failed Programs for Materializing Chain of Infection .....	333
<i>Izuru Kume, Masahide Nakamura, Naoya Nitta, and Etsuya Shibayama</i>	
 <b>Author Index</b> .....	 340