

2016 IEEE International Conference on Computer and Information Technology (CIT 2016)

**Nadi, Fiji
8-10 December 2016**



**IEEE Catalog Number: CFP16355-POD
ISBN: 978-1-5090-4315-6**

**Copyright © 2016 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:	CFP16355-POD
ISBN (Print-On-Demand):	978-1-5090-4315-6
ISBN (Online):	978-1-5090-4314-9

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2016 IEEE International Conference on Computer and Information Technology

CIT 2016

Table of Contents

Message from the CIT 2016 General Chairs.....	xiv
Message from the CIT 2016 Program Chairs.....	xv
Message from the CIT 2016 Steering Chairs.....	xvi
CIT 2016 Organizing and Program Committees.....	xvii
Message from the SocialSec 2016 General Chairs.....	xxi
Message from the SocialSec 2016 Program Chairs.....	xxii
SocialSec 2016 Organizing and Program Committees.....	xxiii
Message from the SC2 2016 Chairs.....	xxv
SC2 2016 Organizing and Program Committees.....	xxvii

IEEE CIT 2016 – 2016 IEEE International Conference on Computer and Information Technology

Session 1: Programming & Software Analysis

Generalized Concatenated Codes for Block and Device Failure Protection	1
<i>Peter Trifonov and Yuangang Wang</i>	
Generating Test Suites with High 3-Way Coverage for Software Testing	10
<i>Yasmeen Akhtar, Soumen Maity, and Reshma C. Chandrasekharan</i>	
Application Characterization Assisted System Design	18
<i>I-Hsin Chung, Carlos H. A. Costa, Leopold Grinberg, and Hui-Fang Wen</i>	
Template4EHR: Building Dynamically GUIs for the Electronic Health Records Using Archetypes	26
<i>André Magno Costa de Araújo, Valéria Cesário Times, Marcus Urbano da Silva, Danielle Santos Alves, and Silvio Heverton Campelo de Santana</i>	
Adaptation Aspects of AIDA Programs	34
<i>Yutaka Watanobe, Nikolay Mirenkov, and Mirai Watanabe</i>	
Spatial Alloy: An Alloy Extension for Modeling Spatial Properties	42
<i>Fei Tang, Jing Liu, Tingliang Zhou, Junfeng Sun, and Haiying Sun</i>	

Session 2: Applications

inLoc: Location-Aware Emergency Evacuation Assistant	50
<i>Kaan Eksen, Tacha Serif, George Ghinea, and Tor-Morten Grønli</i>	
QoE Control of Network Using Collective Intelligence of SNS in Large-Scale Disasters	57
<i>Chihiro Maru, Miki Enoki, Akihiro Nakao, Shu Yamamoto, Saneyasu Yamaguchi, and Masato Oguchi</i>	
Reducing Risk of Rollover in Curve for Heavy-Duty Vehicles with an Agent-Based Advanced Driver Assistance System	65
<i>Willy Tiengo, Evandro B. Costa, and Joseana M. Fechine</i>	
Comparison of Accuracy and Precision of GPS-Enabled Mobile Devices	73
<i>Leong Lee, Matthew Jones, Gregory S. Ridenour, Sam J. Bennett, Arisha C. Majors, Bianca L. Melito, and Michael J. Wilson</i>	
Drishti: A Mobile Application Based Multipurpose Surveillance System	83
<i>Md. Arifuzzaman, Md. Jahidul Islam, Sm Sazirul Islam, and Rajesh Palit</i>	
Brain Cancer Diagnosis-Association Rule Based Computational Intelligence Approach	89
<i>Jesmin Nahar, A. B. M. Shawkat Ali, Tasadduq Imam, Kevin Tickle, and Phoebe Chen</i>	

Session 3: Short Papers

The SmartPT: Wearble Sensor Integration and Tracking in Training Equipment	96
<i>Teddy Falsen Hiis, Tor-Morten Groenli, and Gheorghita Ghinea</i>	
Development of an Android Service to add IOIO Hardware Features to Android Apps	100
<i>Slim Chtourou, Mohamed Kharat, Nader Ben Amor, Mohamed Jallouli, and Mohamed Abid</i>	
Analysis of Complex Data in Telecommunications Industry	104
<i>Nayana Gupta, Mohammed Wasid, and Rashid Ali</i>	
A Statistical Technique for Online Anomaly Detection for Big Data Streams in Cloud Collaborative Environment	108
<i>G. S. Smrithy and Ramadoss Balakrishnan</i>	
Quantum Computing in Big Data Analytics: A Survey	112
<i>Tawseef Ayoub Shaikh and Rashid Ali</i>	
Hosting Virtual IoT Resources on Edge-Hosts with Blockchain	116
<i>Mayra Samaniego and Ralph Deters</i>	
Campus Ride: An Environment-Friendly Ride Sharing Platform for Academic Institutions	120
<i>Anindya Chowdhury, Abid Jamal, Rubayath Alam, and Rajesh Palit</i>	

Session 4: System Design

A Survey on Mobility Management Techniques in VANETs	125
<i>Bilal Haider, Shagufta Henna, Ambreen Gul, and Farhan Aadil</i>	
Architecture for Hybrid Language Systems	134
<i>Mirai Watanabe, Yutaka Watanobe, and Alexander Vazhenin</i>	

Relative and Absolute Positioning in Ultra Dense Mems System	140
<i>Derma Moffo, Philippe Canalda, and François Spies</i>	
Ontology Techniques for Representing the Problem of Discourse: Design of Solution Application Perspective	148
<i>Shah Jahan Miah, Hafizul Islam, and Ahmad Z. H. Samsudin</i>	
Implementation of Alternating Median Based Round Robin Scheduling Algorithm	154
<i>Salman Arif, Naveed Ghaffar, and Ali Javed</i>	

Session 5: Social Networks & Recommendation System

Extracting Actions with Improved Part of Speech Tagging for Social Networking Texts	161
<i>Ameni Youssfi Noura, Yassine Jamoussi, and Henda Ben Ghezela Hajjani</i>	
Community Detection for Cold Start Problem in Personalization: Community Detection is Large Social Network Graphs Based on Users' Structural Similarities and Their Attribute Similarities	167
<i>Ankush Bhatia</i>	
Degree of Integration into Social Networks (DISN) Evaluation Model Based on Micro-Blogging Platforms and Information Dissemination Prediction	172
<i>Xi Chen, Jianwei Li, Zeyu Zheng, and Tianran Wang</i>	
Dynamic Community Mining and Tracking Based on Temporal Social Network Analysis	177
<i>Xiaokang Zhou, Wei Liang, Bo Wu, Zixian Lu, Shoji Nishimura, Takashi Shinomiya, and Qun Jin</i>	
User Actions and Timestamp Based Personalized Recommendation for E-Commerce System	183
<i>Congcong Chen, Dong Wang, and Yue Ding</i>	
An Improved Ant Colony Optimization Algorithm for Recommendation of Micro-Learning Path	190
<i>Qin Zhao, Yueqin Zhang, and Jian Chen</i>	

Session 6: Networking & Web I

QoS-Aware Traffic-Efficient Web Service Selection over BigData Space	197
<i>T. H. Akila, S. Siriweera, Incheon Paik, and Banage T. G. S. Kumara</i>	
Joint Optimization of VM Placement and Rule Placement towards Energy Efficient Software-Defined Data Centers	204
<i>Hong Yao, Hui Li, Chao Liu, Muzhou Xiong, Deze Zeng, and Guohui Li</i>	
Availability Modeling and Analysis of a Virtualized System Using Stochastic Reward Nets	210
<i>Dong Seong Kim, Jin B. Hong, Tuan Anh Nguyen, Fumio Machida, Jong Sou Park, and Kishor S. Trivedi</i>	
Native Web Communication Protocols and Their Effects on the Performance of Web Services and Systems	219
<i>Nitin Naik, Paul Jenkins, Philip Davies, and David Newell</i>	

Session 7: Security & Privacy I

High-Dimensional Crowdsourced Data Distribution Estimation with Local Privacy	226
<i>Xuebin Ren, Chia-Mu Yu, Weiren Yu, Shusen Yang, Xinyu Yang, and Julie McCann</i>	
Hurst Parameter Based Anomaly Detection for Intrusion Detection System	234
<i>Song Jin Yu, Pauline Koh, Hyukmin Kwon, Dong Seong Kim, and Huy Kang Kim</i>	
Hybrid Attack Path Enumeration System Based on Reputation Scores	241
<i>Young Hoon Moon, Ji Hong Kim, Dong Seong Kim, and Huy Kang Kim</i>	
Security Modelling and Analysis of Dynamic Enterprise Networks	249
<i>Simon Enoch Yusuf, Mengmeng Ge, Jin B. Hong, Huy Kang Kim, Paul Kim, and Dong Seong Kim</i>	
Performance Evaluation of a Game Theory-Based Fault Diagnosis Algorithm Under Partial Comparison Syndrome	257
<i>Mourad Elhadeif and Sofiane Grira</i>	

Session 8: Artificial Intelligence & Machine Learning

Particle Swarm Stepwise Algorithm (PaSS) on Multicore Hybrid CPU-GPU Clusters	265
<i>Mu Yang, Ray-Bing Chen, I-Hsin Chung, and Weichung Wang</i>	
Concept Drift Detection on Streaming Data under Limited Labeling	273
<i>Young In Kim and Cheong Hee Park</i>	
Bag-of-Concepts Document Representation for Bayesian Text Classification	281
<i>Marcos Mouriño-García, Roberto Pérez-Rodríguez, Luis Anido-Rifón, and Miguel Gómez-Carballa</i>	
Impact of Future Intelligent Information Technologies on the Methodology of Scientific Research	289
<i>Andrzej M. J. Skulimowski</i>	
A Controlled Experiment Between Two Methods on Ten-Digits Air Writing	299
<i>Yiming Zhou, Zeyang Dai, and Lei Jing</i>	
Distributed Multi-class Rule Based Classification Using RIPPER	303
<i>Aruna Govada, Varsha S. Thomas, Ipsita Samal, and Sanjay K. Sahay</i>	

Session 9: Speech & Image Analysis

Feature Descriptors: A Review of Multiple Cues Approaches	310
<i>Cuong H. Pham, Yuichi Yaguchi, and Keitaro Naruse</i>	
Saliency Detection via Background Seeds Combined with Bayesian Model	316
<i>Linhua Jiang, Pengfei Bai, and Xiao Lin</i>	
Piecewise Polynomial High-Order Hidden Markov Models with Applications in Speech Recognition	323
<i>Lee-Min Lee</i>	
Sentence-Level Automatic Lecture Highlighting Based on Acoustic Analysis	328
<i>Xiaoyin Che, Sheng Luo, Haojin Yang, and Christoph Meinel</i>	

Micro-Scale Severe Weather Prediction Based on Region Trajectories Extracted from Meteorological Radar Data	335
<i>Xingang Wang, Suiping Qi, Zhigang Gai, Hui Li, Enxiao Liu, Weihao Xie, and Ding Hu</i>	

Session 10: Networking & Web II

Multi-way Clustering for Heterogeneous Information Networks with General Network Schema	339
<i>Jibing Wu, Yahui Wu, Su Deng, and Hongbin Huang</i>	
Tabu Approach for Adaptive Resource Allocation and Selection Carrier Aggregation in LTE-Advanced Network	347
<i>Radhia Khedhir, Kais Mnif, Aymen Belghith, and Lotfi Kamoun</i>	
Improving DHT Load Balance Using the Churn	354
<i>Qi Zhang, Shasha Li, Qingbo Wu, and Jie Yu</i>	
Reasonably Migrating Virtual Machine in NFV-Featured Networks	361
<i>Jing Xia, Deming Pang, Zhiping Cai, Ming Xu, and Gang Hu</i>	

Session 11: Security & Privacy II

Towards Privacy-Aware Web Services Compositions	367
<i>Imen Khabou, Mohsen Rouached, Rafik Bouaziz, and Mohamed Abid</i>	
Efficient Hybrid Encryption System Based on Block Cipher and Chaos Generator	375
<i>S. Kotel, F. Sbiaa, M. Zeghid, M. Machhout, A. Baganne, and R. Tourki</i>	
Analysis on Bidding Behaviours for Detecting Shill Bidders in Online Auctions	383
<i>Nazia Majadi, Jarrod Trevathan, and Neil Bergmann</i>	
A Selective Encryption Scheme with Multiple Security Levels for the H.264/AVC Video Coding Standard	391
<i>F. Sbiaa, S. Kotel, M. Zeghid, R. Tourki, M. Machhout, and A. Baganne</i>	

IEEE SocialSec 2016 – Second IEEE International Symposium on Security and Privacy in Social Networks and Big Data

Request Evaluation for Policy-Based Attribute Access Control in Social Network Cloud	399
<i>Katanosh Morovat and Brajendra Panda</i>	
Probabilistic Inference on Twitter Data to Discover Suspicious Users and Malicious Content	407
<i>Praveen Rao, Anas Katib, Charles Kamhoua, Kevin Kwiat, and Laurent Njilla</i>	
Enhancement of Permission Management for an ARM-Android Platform	415
<i>Rui Chang, Liehui Jiang, Wenzhi Chen, Hongqi He, and Shuiqiao Yang</i>	
Comprehensive Analysis of Network Traffic Data	423
<i>Yuantian Miao, Zichan Ruan, Lei Pan, Jun Zhang, Yang Xiang, and Yu Wang</i>	
Studying the Global Spreading Influence and Local Connections of Users in Online Social Networks	431
<i>Jiaojiao Jiang, Youyang Qu, Shui Yu, Wanlei Zhou, and Wei Wu</i>	

IEEE SC2-2016 – The Sixth IEEE International Symposium on Cloud and Service Computing

Session 1

A Performance and Energy Comparison of Fault Tolerance Techniques for Exascale Computing Systems	436
<i>Daniel Dauwe, Sudeep Pasricha, Anthony A. Maciejewski, and Howard Jay Siegel</i>	
Peer-Assisted Streaming Distribution over CCN	444
<i>Meilian Lu, Danhua Sun, Yan Shi, and Yuhong Li</i>	
Community Detection in Location-Based Social Networks: An Entropy-Based Approach	452
<i>Jiahao Liu, You Li, Guohui Ling, Ronghua Li, and Zibin Zheng</i>	
Privacy-Enhanced Scheduling for Smart Power Grids	460
<i>Philander Adriaan, Yan Bai, and Donald Chinn</i>	
Distributed Content Dissemination with a Rank Function	468
<i>Anna Kobusińska, Jerzy Brzeziński, Jakub Aftowicz, and Grzegorz Grzelachowski</i>	
An Android Malware Detection Approach Using Bayesian Inference	476
<i>Che-Hsun Liu, Zhi-Jie Zhang, and Sheng-De Wang</i>	

Session 2

Knowledge Discovery from Big Social Key-Value Data	484
<i>Carson K. Leung, Peter Braun, Murun Enkhee, Adam G. M. Pazdor, Oluwafemi A. Sarumi, and Kimberly Tran</i>	
Supporting Edge Intelligence in Service-Oriented Smart IoT Applications	492
<i>Zhenqiu Huang, Kwei-Jay Lin, and Chi-Sheng Shih</i>	
Accuracy Improvement for Backup Tasks in Hadoop Speculative Algorithm	500
<i>Worachate Apichanukul, Jun Kawahara, and Shoji Kasahara</i>	
CIDS: Adapting Legacy Intrusion Detection Systems to the Cloud with Hybrid Sampling	508
<i>Qingtang Xia, Tianjia Chen, and Wei Xu</i>	
Cloud-Assisted Dynamic Content Sharing among Vehicles	516
<i>Yoshiaki Adachi, Hirozumi Yamaguchi, Teruo Higashino, and Takaaki Umedu</i>	
A Traceable Signcryption Scheme for Secure Sharing of Data in Cloud Storage	524
<i>Rohit Ahuja, Sraban Kumar Mohanty, and Kouichi Sakurai</i>	

Session 3

A Scalable Integrated SDN and OpenStack Management System	532
<i>Sing-Chi Chen and Ren-Hung Hwang</i>	
A Highly Reliable Storage Based on SSD Array for Cloud Computing Environment	538
<i>HooYoung Ahn, Junsu Kim, and YoonJoon Lee</i>	
G-KVM: A Full GPU Virtualization on KVM	545
<i>Hong-Cyuan Hsu and Che-Rung Lee</i>	

Lightweight Feature Selection Methods Based on Standardized Measure of Dispersion for Mining Big Data	553
<i>Simon Fong, Robert P. Biuk-Aghai, and Yain-Whar Si</i>	

Session 4

Fostering Collaborative Edge Service Provision in Community Clouds with Docker	560
<i>Roger Baig, Felix Freitag, and Leandro Navarro</i>	
Energy Aware Resource Management for MapReduce Jobs with Service Level Agreements in Cloud Data Centers	568
<i>Adam Gregory and Shikharesh Majumdar</i>	
A Novel Storage Architecture for Facilitating Efficient Analytics of Health Informatics Big Data in Cloud	578
<i>Manish Kumar Pandey and Karthikeyan Subbiah</i>	
The Major Research Themes of Big Data Literature: From 2001 to 2016	586
<i>Louis Y. Y. Lu and John S. Liu</i>	
A Data Backup Algorithm Based on Failure Correlation in In-memory Storage System	591
<i>JianHua Gu and XiaoDong Dong</i>	
Data Management for the RedisDG Scientific Workflow Engine	599
<i>Leila Abidi, Souha Bejaoui, Christophe Cerin, Jonathan Lejeune, Yanik Ngoko, and Walid Saad</i>	

Poster Session

ModelX: Using Model Checking to Find Design Errors of Cloud Applications	607
<i>Tian Tian, Yiming Zhang, Qiao Zhou, and Ping Zhong</i>	
Helmet Wearing Detection in Thailand Using Haar Like Feature and Circle Hough Transform on Image Processing	611
<i>Pathasu Doungmala and Katanyoo Klubsuwan</i>	
Intruder Detection Using Deep Learning and Association Rule Mining	615
<i>Asantha Thilina, Shakthi Attanayake, Sacith Samarakoon, Dahami Nawodya, Lakmal Rupasinghe, Nadith Pathirage, Tharindu Edirisinghe, and Kesavan Krishnadeva</i>	
Inter-organizational Middleware System Implementations: Do's and Dont's of Business Integration	621
<i>Radhouane B. N. Jrad and David Sundaram</i>	
Design and Development of a Mobile Application Based Drug Requisition System	629
<i>A. T. M. Mosharof Hossain, Nazia Hasan Tuktuki, Hasibul Kabir, and Rajesh Palit</i>	
CitizenConnect: Connecting Citizens with Public Service Providers	637
<i>Mohammad Adnan Shahriar, Sadman Sakib, and Rajesh Palit</i>	
A Reference Architecture for the Logistics Service Map: Structuring and Composing Logistics Services in Logistics Networks	644
<i>Michael Glöckner, André Ludwig, and Bogdan Franczyk</i>	
A Resource Scheduling Method with Rough Set for Virtual Cluster	652
<i>Cunqun Fan, Xiangang Zhao, Manyun Lin, Lan Wei, Zhanyun Zhang, Xi Zhang, and You Ma</i>	

Heterogeneous and Homogeneous Samples with Different Weights for Classification	655
<i>Baoping Zou</i>	
Byzantine Fault Tolerant Optimization in Federated Cloud Computing	658
<i>Hojjat Baghban, Mahdis Moradi, Ching-Hsien Hsu, Jerry Chou, and Yeh-Ching Chung</i>	
Supervised Learning Based Approach to Aspect Based Sentiment Analysis	662
<i>Nipuna Upeka Pannala, Chamira Priyamanthi Nawarathna, J. T. K. Jayakody, Lakmal Rupasinghe, and Kesavan Krishnadeva</i>	

Session 5

Power-Minimization Computing Resource Allocation in Mobile Cloud-Radio Access Network	667
<i>Kezhi Wang and Kun Yang</i>	
A Novel Method for Designing Information Technology Services	673
<i>Yi-Chih Kao, Yung-Chia Chang, Sheng-Lung Peng, and Ruay-Shiung Chang</i>	
A Risk Evaluation Framework for Service Level Agreements	681
<i>Babak Yadrnjiaghdam, Komal Hotwani, and Nasseh Tabrizi</i>	
Predictive Dynamic Algorithm: An Approach toward QoS-Aware Service for IoT-Cloud Environment	686
<i>Maycon Leone, Maycon Peixoto, Dionisio Leite, Carlos Henrique, Danilo Segura, Bruno Tardiole, and Bruno Guazzelli</i>	
Performance Comparison on the Heterogeneous File System in Cloud Storage Systems	694
<i>Wei-Peng Chen and Chuan-Ming Liu</i>	
Constructing PM2.5 Map Based on Mobile PM2.5 Sensor and Cloud Platform	702
<i>Yung-Sheng Lin, Yu-Hsiang Chang, and Yue-Shan Chang</i>	

Session 6

RNN-Based Personalized Activity Recognition in Multi-person Environment Using RFID	708
<i>Sungpil Woo, Jaewook Byun, Seonghoon Kim, Hoang Minh Nguyen, Janggwan Im, and Daeyoung Kim</i>	
Cloud Based Privacy Preserving Collaborative Business Process Management	716
<i>Björn Schwarzbach, Bogdan Franczyk, Lucas Petrich, Arkadius Schier, and Michael Ten Hompel</i>	
Considerations of Emerging Cloud Computing in Financial Industry and One-Time Password with Valet Key Solution	724
<i>Te-Yuan Lin and Chiou-Shann Fuh</i>	
E-commerce (WEB) Application Security: Defense against Reconnaissance	732
<i>Ashan Chulanga Perera, Krishnadeva Kesavan, Sripa Vimukthi Bannakkotuwa, Chethana Liyanapathirana, and Lakmal Rupasinghe</i>	
FoTSeC — Human Security in Fog of Things	743
<i>D. Nunes, J. Sá Silva, A. Figueira, H. Dias, A. Rodrigues, V. Pereira, F. Boavida, and S. Sinche</i>	

Novel Survey on the Color-Image Graying Algorithm	750
<i>Xiaoqiang Zhang and Xuesong Wang</i>	

Session 7

Research on Improved 2D-BPSO-Based VM-Container Hybrid Hierarchical Cloud Resource Scheduling Mechanism	754
<i>Chunxiao Fan, Yeqiao Wang, and Zhigang Wen</i>	

I/O-Conscious and Prediction-Enabled Virtual Machines Scheduling	760
<i>Jinlei Jiang, Xun Zhao, Yongwei Wu, and Weimin Zheng</i>	

Hypervisor Assisted Forensics and Incident Response in the Cloud	768
<i>Vincent E. Urias, William M. S. Stout, Caleb Loverro, and John W. Young</i>	

A Trading-Inspired Approach to the Dynamic Server Consolidation Problem in Data Centers	776
<i>Grant Wu and Maolin Tang</i>	

Author Index	783
---------------------------	-----