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Volume 1195

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Leonard Barolli · Aneta Poniszewska-Maranda ·  
Hyunhee Park  
Editors

# Innovative Mobile and Internet Services in Ubiquitous Computing

Proceedings of the 14th International  
Conference on Innovative Mobile and Internet  
Services in Ubiquitous Computing  
(IMIS-2020)

 Springer

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ISSN 2194-5357                      ISSN 2194-5365 (electronic)  
Advances in Intelligent Systems and Computing  
ISBN 978-3-030-50398-7              ISBN 978-3-030-50399-4 (eBook)  
<https://doi.org/10.1007/978-3-030-50399-4>

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Welcome Message of IMIS-2020 International Conference Organizers

Welcome to the 14th International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS-2020), which will be held from July 1 to July 3, 2020, Lodz University of Technology, Poland, in conjunction with the 14th International Conference on Complex, Intelligent and Software Intensive Systems (CISIS-2020).

This International Conference focuses on the challenges and solutions for Ubiquitous and Pervasive Computing (UPC) with an emphasis on innovative, mobile and Internet services. With the proliferation of wireless technologies and electronic devices, there is a fast growing interest in UPC. UPC enables to create a human-oriented computing environment where computer chips are embedded in everyday objects and interact with physical world. Through UPC, people can get online even while moving around, thus having almost permanent access to their preferred services. With a great potential to revolutionize our lives, UPC also poses new research challenges. The conference provides an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of UPC.

For IMIS-2020, we received many paper submissions from all over the world. The papers included in the proceedings cover important aspects from UPC research domain.

It is impossible to organize such a successful program without the help of many individuals. We would like to express our great appreciation to the authors of the submitted papers, the program committee members, who provided timely and significant reviews, and special session chairs for their great efforts. We are grateful to Honorary Co-Chairs: Prof. Makoto Takizawa, Hosei University, Japan; and Prof. Sławomir Wiak, Lodz University of Technology, Poland, for their advices and support.

Finally, we would like to thank Web Administrator Co-Chairs and Local Arrangement Co-Chairs for their excellent and timely work.

We hope that all of you enjoy IMIS-2020 and find this a productive opportunity to learn, exchange ideas and make new contacts.

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# **IMIS-2020 Keynote Talks**

# Semantics, Patterns and Compiler Techniques for Portable App Development in Multiple Cloud and Big Data Platforms

Beniamino Di Martino

University of Campania “Luigi Vanvitelli”, Aversa, Italy

**Abstract.** Cloud vendor lock-in and interoperability gaps arise (among many reasons) when semantics of resources and services and of application programming interfaces is not shared. The same issue arises with big data platforms: different programming, deployment and execution models, many different Machine Learning Libraries and related APIs. Standards and techniques borrowed from SOA and semantic Web services areas might help in gaining shared, machine readable description of cloud and big data offerings (resources, services at platform and application level, libraries and their API groundings), thus allowing automatic discovery, matchmaking, and thus selection, brokering, interoperability end composition of cloud services among multiple clouds, and seamless programming of analytics on multiple big data platforms. This talk will illustrate in particular the outcomes of the EU-funded projects MOSAIC (<http://www.mosaic-cloud.eu>) and TOREADOR (<http://www.toreador-project.eu>).

# Distributed Systems of the Day for Efficient Digital Data Exchange and Sharing: A System Transition from Peer-to-Peer to Cloud-Fog-Edge Computing

Shinji Sugawara

Chiba Institute of Technology, Chiba, Japan

**Abstract.** With the recent increase of bandwidth for communication networks, the major improvement of computing processors and the spread of cloud computing, the exchanges or sharing of various types and huge amount of data or digital contents has become very active among a great many users on a large-scale network represented by the Internet. For this, various distributed systems have been used so far and major system architecture has been continuously changing according to the functions and purposes required at each time period. In this talk, we describe the historical changes and classifications of distributed systems used for searching, exchanging, storing and sharing data deployed on networks and their respective advantages. We introduce examples of actually implemented systems. Furthermore, we discuss the possibility of future development of distributed systems for data sharing.

# Contents

<b>Performance Evaluation of WMN-PSOSA-DGA Simulation System Considering Linearly Decreasing Vmax Method and Rational Decrement of Vmax Method . . . . .</b>	<b>1</b>
Admir Barolli, Shinji Sakamoto, Seiji Ohara, Leonard Barolli, and Makoto Takizawa	
<b>IoT Node Elimination and Selection for Completing Tasks in Opportunistic Networks: A Fuzzy Logic Approach . . . . .</b>	<b>11</b>
Miralda Cuka, Donald Elmazi, Keita Matsuo, Makoto Ikeda, Leonard Barolli, and Makoto Takizawa	
<b>A Fuzzy-Based Simulation System for Driving Risk Management in VANETs Considering Weather Condition as a New Parameter . . . . .</b>	<b>23</b>
Kevin Bylykbashi, Ermioni Qafzezi, Makoto Ikeda, Keita Matsuo, Leonard Barolli, and Makoto Takizawa	
<b>Research on Association Analysis Technology of Network Attack Trace Based on Web Log . . . . .</b>	<b>33</b>
Shiyu Li and Baojiang Cui	
<b>Ethical Use of Mobile Technology in the Academic Environment . . . . .</b>	<b>44</b>
Liliana Mățã	
<b>A Hybrid Information-Based Smartphone Indoor-Position Approach . . . . .</b>	<b>56</b>
Szu-Yin Lin, Fang-Yie Leu, Chia-Yin Ko, Ming-Chien Shih, and Wei-Jia Tang	
<b>An Accounting Ledger System Using the Hyperledger Fabric-Based Blockchain . . . . .</b>	<b>65</b>
Jiha Kim, HyeWon Kim, WooSeok Hyun, and Hae-Duck J. Jeong	

<b>Protocol Design for Boarding Confirmation Through Arduino Sensing</b> . . . . .	73
Jiyoon Kim, Soobin Ahn, and Jiyoung Lim	
<b>A Security Analysis Approach for Secure Color-Code Key Exchange Protocol by Using BAN Logic</b> . . . . .	81
Hsing-Chung Chen, Mosiur Rahaman, and Cahya Damarjati	
<b>An UWB Cyclostationary Detection Algorithm Based on Nonparametric Cusum</b> . . . . .	94
Xiao-ou Song and Xiao-rong Wang	
<b>Proposal of a Disaster Evacuation Support System Using Beacon</b> . . . . .	104
Tomoyuki Ishida and Kanae Sakamoto	
<b>A Convolutional Neural Network Model for Object Detection Based on Receptive Field</b> . . . . .	114
Yifeng Dong and Tianhan Gao	
<b>The Study and Realization of a Binary-Based Address Sanitizer Based on Code Injection</b> . . . . .	125
Yuchao Wang and Baojiang Cui	
<b>Modeling the Risk of Data Breach Incidents at the Firm Level</b> . . . . .	135
Kazuki Ikegami and Hiroaki Kikuchi	
<b>IoT Cryptosecurity: Overview and Potential Solutions</b> . . . . .	149
Jacek Wytrębowicz and Michał Goworko	
<b>“Guess Who?” Large-Scale Data-Centric Study of the Adequacy of Browser Fingerprints for Web Authentication</b> . . . . .	161
Nampoina Andriamilanto, Tristan Allard, and Gaëtan Le Guelvouit	
<b>Adaptive Architecture and Principles for Securing the IoT Systems</b> . . . . .	173
Asif Qumer Gill, Ghassan Beydoun, Mahmood Niazi, and Habib Ullah Khan	
<b>A Visual Particle System Based on Mechanism Model Data in Digital Twin</b> . . . . .	183
Zuan Gu and Tianhan Gao	
<b>An EEG Emotion Classification System Based on One-Dimension Convolutional Neural Networks and Virtual Reality</b> . . . . .	194
Xinbei Jiang and Tianhan Gao	
<b>Implementation of a Moving Omnidirectional Access Point Robot and a Position Detecting System</b> . . . . .	203
Atushi Toyama, Kenshiro Mitsugi, Keita Matsuo, and Leonard Barolli	

**Uplink Resource Allocation Based on Short Block-Length Regime in Heterogeneous Cellular Networks for Smart Grid** . . . . . 213  
 Sai Wu, Zihui Wang, Zhe Li, Zheng WeiJun, Weiping Shao, Baojuan Ma, Shunyu Yao, and Ying Wang

**Multiuser Channel Access with RTS-CTS Algorithm for Li-Fi Communications** . . . . . 225  
 Hyunhee Park

**Design and Implementation of a Novel Testbed for Automotive Security Analysis** . . . . . 234  
 Youngho An, Junyoung Park, Insu Oh, Myoungsu Kim, and Kangbin Yim

**Reinforcement Learning-Based Fuzzing Technology** . . . . . 244  
 Zheng Zhang, Baojiang Cui, and Chen Chen

**Research on IoT Device Vulnerability Mining Technology Based on Static Preprocessing and Coloring Analysis** . . . . . 254  
 Min Yao, Baojiang Cui, and Chen Chen

**Computer-Aided English Education in China: An Online Automatic Essay Scoring System** . . . . . 264  
 Dapeng Li, Shaodong Zhong, Zhizhang Song, and Yijia Guo

**Survey of Cyberspace Resources Scanning and Analyzing** . . . . . 279  
 Yuanwei Hou, Xiaoxiao Chen, Yongle Hao, Zhiwei Shi, and Shiyu Yang

**Modeling and Analysis of Cyberspace Threat Sources Based on Vulnerabilities** . . . . . 292  
 Yijia Guo, Yuanwei Hou, Yongle Hao, and Wenjue Xu

**A Dynamic Instrumentation Technology for IoT Devices** . . . . . 304  
 Chen Chen, Weikong Qi, Wenting Jiang, and Peng Sun

**Theoretical Research and Practical Exploration on the Teaching Reform of Higher Mathematics** . . . . . 313  
 Yiyue Sun

**Research on Experimental Teaching Reform of Electronic Technology Course** . . . . . 324  
 Chunming Zhang, Yiyue Sun, and Xiaofeng Zhang

**The Exploration and Research of Blended Teaching Mode Based on “Internet+” Big Data Cloud Platform** . . . . . 334  
 Xiang Ma, Xuhui Fan, Wei Li, Jiangtao Li, and Qiong Li

**The Analysis of Higher Mathematics Teaching Strategy Based on the Innovative Teaching Mode** . . . . . 344  
 Xuhui Fan, Wei Li, Zhimin Wang, Yiyue Sun, and Lili Su

**Design of Gradient Push Algorithm in Time-Varying Directed Graph** ..... 354  
 Qingchao Zhu, Yue Wang, Xiao-ou Song, and Hongmei Huang

**Generalized Snell’s Law and Its Verification by Metasurface** ..... 364  
 Liming Zheng and Yi Zhao

**A Targeted Fuzzing Technique Based on Neural Networks and Particle Swarm Optimization** ..... 373  
 Yuyue Wang, Chen Chen, and Baojiang Cui

**Anomaly Network Traffic Detection Based on Deep Transfer Learning** ..... 384  
 Pengfei Xiong, Baojiang Cui, and Zishuai Cheng

**Distributed Facial Feature Clustering Algorithm Based on Spatiotemporal Locality** ..... 394  
 Qiutong Lin, Bihua Zhuo, Lili Jiao, Li Liao, and Jiangtao Guo

**Developing an AR-Based Ubiquitous Learning System for a Smart Campus**..... 404  
 Shian-Shyong Tseng, Shih-Nung Chen, and Tsung-Yu Yang

**The Development and Evaluation of a Smart E-Learning Platform for Programming Instruction** ..... 415  
 Anthony Y. H. Liao and Shun-Pin Huang

**Research on Logistics Distribution Model of E-commerce Based on Improved Ant Colony Algorithm** ..... 426  
 Yue Wang, Qingchao Zhu, Xiao-ou Song, Hongmei Huang, and Qiu Yang

**Logical Network Separation and Update Inducing Techniques of Non-updated Vaccine Host by Creating Flow Rule in SDN** ..... 436  
 Dohyeon Bak, Mintae Kim, Jonghoon Lim, Raeseung Jang, Wonyoung Jang, and Sun-Young Lee

**Group Delegated ID-Based Proxy Re-encryption for PHR**..... 447  
 Won-Bin Kim, Im-Yeong Lee, and Kang-Bin Yim

**Analysis on Account Hijacking and Remote Dos Vulnerability in the CODESYS-Based PLC Runtime** ..... 457  
 Eunseon Jeong, Junyoung Park, Insu Oh, Myoungsu Kim, and Kangbin Yim

**Vestiges of Past Generation: Threats to 5G Core Network** ..... 468  
 Seongmin Park, Bomin Choi, Youngkwon Park, Dowon Kim, Eunseon Jeong, and Kangbin Yim

**Feasibility Study of Introducing Daily Rental Suites Business Model into Long-Term Care Institutions**..... 481  
 Kuei-Yuan Wang, Ying-Li Lin, Chien-Kuo Han, and Tsung-Chih Hung

<b>Black-Litterman Model and Momentum Strategy: Evidence of Taiwan Top 50 ETF</b> . . . . .	490
Shyh-Weir Tzang, Chun-Ping Chang, Chih-Hsing Hung, and Yung-Shun Tsai	
<b>Investment Timing and External Effects</b> . . . . .	498
Chun-Ping Chang, Munkhnaran Duurenjargal, Zolzaya Batjargal, and Shyh-Weir Tzang	
<b>The Choice Between Foreign Direct Investment and Export with Industry Competition and Marginal Cost</b> . . . . .	504
Chun-Ping Chang, Yung-Shun Tsai, Shyh-Weir Tzang, and Zolzaya Batjargal	
<b>Information Asymmetry, Market Liquidity and Abnormal Returns</b> . . .	510
Yung-Shun Tsai, Shyh-Weir Tzang, and Chun-Ping Chang	
<b>Examining the Impacts of Strategic Alliance – Examples of the Taiwan Semiconductor Industry</b> . . . . .	519
Mei-Hua Huang, Chia-Hui Hsieh, Perng-Fei Huang, and Chiung-Yen Chen	
<b>The Relationship Between Long-Term Care Issues and Disability Insurance</b> . . . . .	529
Ying-Li Lin, Kuei-Yuan Wang, and Li-Lu Hsu	
<b>Is Enforcing the Production and Filing of Corporate Social Responsibility Reports Conducive to Improving Corporate Performance?</b> . . . . .	540
Chiung-Yen Chen, Mei-Hua Huang, Kuan-Ling Li, Ho-Yun Chao, Ke-Jie Shen, and Szu-Han Yu	
<b>An Inventory Model for Perishable Items Under Upstream and Downstream Trade Credit</b> . . . . .	552
Ya-Lan Chan, Sue-Ming Hsu, and Mei-Hua Liao	
<b>The Social Performance of University Social Responsibility Elderly Project: The Perspective of Social Return on Investment</b> . . . . .	561
Ya-Lan Chan, Sue-Ming Hsu, Neo Koe Hsin, and Mei-Hua Liao	
<b>Investment Concentration and Home Bias</b> . . . . .	573
Mei-Hua Liao, Wei-Li Kuo, and Ya-Lan Chan	
<b>Investor Sentiment and Governance Mechanisms</b> . . . . .	579
Mei-Hua Liao, Chieh-Lin He, Ruirui Cui, and Ya-Lan Chan	
<b>A Static Instrumentation Method for IoT Firmware ELF Binary Emulation Patching</b> . . . . .	586
Yiqi Sun, Baojiang Cui, Chen Chen, and Yifei Wang	



**Pseudonym Schemes Based on Location Privacy Protection in VANETs: A Survey** ..... 597  
Tianhan Gao and Lei Zhao

**Application of Blockchain Technology in Data Management of University Scientific Research** ..... 606  
Xiao-Feng Zhang

**Research on Vulnerability Site Location and Vulnerability Similarity Technology** ..... 614  
Xiaochen Wang, Baojiang Cui, Xinda Xu, and Qian Ma

**Implementation of Digital Signature on QR Symbol by Area Division Using Rhombic Sub-cells** ..... 624  
Nobuyuki Teraura, Isao Echizen, and Keiichi Iwamura

**Author Index** ..... 639