

Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering

201

Editorial Board

Ozgur Akan

Middle East Technical University, Ankara, Turkey

Paolo Bellavista

University of Bologna, Bologna, Italy

Jiannong Cao

Hong Kong Polytechnic University, Hong Kong, Hong Kong

Geoffrey Coulson

Lancaster University, Lancaster, UK

Falko Dressler

University of Erlangen, Erlangen, Germany

Domenico Ferrari

Università Cattolica Piacenza, Piacenza, Italy

Mario Gerla

UCLA, Los Angeles, USA

Hisashi Kobayashi

Princeton University, Princeton, USA

Sergio Palazzo

University of Catania, Catania, Italy

Sartaj Sahni

University of Florida, Florida, USA

Xuemin Sherman Shen

University of Waterloo, Waterloo, Canada

Mircea Stan

University of Virginia, Charlottesville, USA

Jia Xiaohua

City University of Hong Kong, Kowloon, Hong Kong

Albert Y. Zomaya

University of Sydney, Sydney, Australia

More information about this series at <http://www.springer.com/series/8197>

Shangguang Wang · Ao Zhou (Eds.)

Collaborate Computing: Networking, Applications and Worksharing

12th International Conference, CollaborateCom 2016
Beijing, China, November 10–11, 2016
Proceedings

Editors

Shanguang Wang
Beijing University of Posts
and Telecommunications
Beijing
China

Ao Zhou
Beijing University of Posts
and Telecommunications
Beijing
China

ISSN 1867-8211 ISSN 1867-822X (electronic)
Lecture Notes of the Institute for Computer Sciences, Social Informatics
and Telecommunications Engineering
ISBN 978-3-319-59287-9 ISBN 978-3-319-59288-6 (eBook)
DOI 10.1007/978-3-319-59288-6

Library of Congress Control Number: 2017942991

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2017
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.
The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

Over the past two decades, many organizations and individuals have relied on electronic collaboration between distributed teams of humans, computer applications, and/or autonomous robots to achieve higher productivity and produce joint products that would have been impossible to develop without the contributions of multiple collaborators. Technology has evolved from standalone tools to open systems supporting collaboration in multi-organizational settings, and from general purpose tools to specialized collaboration grids. Future collaboration solutions that fully realize the promises of electronic collaboration require advancements in networking, technology and systems, user interfaces and interaction paradigms, and interoperation with application-specific components and tools.

The CollaborateCom 2016 conference series is a major venue in which to present the successful efforts to address the challenges presented by collaborative networking, technology and systems, and applications. This year's conference continued with several of the changes made for CollaborateCom 2015, and its topics of interest include, but are not limited to: participatory sensing, crowdsourcing, and citizen science; architectures, protocols, and enabling technologies for collaborative computing networks and systems; autonomic computing and quality of services in collaborative networks, systems, and applications; collaboration in pervasive and cloud computing environments; collaboration in data-intensive scientific discovery; collaboration in social media; big data and spatio-temporal data in collaborative environments/systems; collaboration techniques in data-intensive computing and cloud computing.

Overall, CollaborateCom 2016 received a record 116 paper submissions, up slightly from 2015 and continuing the growth compared with other years. All papers were rigorously reviewed, with all papers receiving at least three and many four or more reviews with substantive comments. After an on-line discussion process, we accepted 43 technical track papers and 33 industry track papers, three papers for the Multivariate Big Data Collaborations Workshop and two papers for the Social Network Analysis Workshop. ACM/Springer CollaborateCom 2016 continued the level of technical excellence that recent CollaborateCom conferences have established and upon which we expect future ones to expand.

This level of technical achievement would not be possible without the invaluable efforts of many others. My sincere appreciation is extended first to the area chairs, who made my role easy. I also thank the many Program Committee members, as well as their subreviewers, who contributed many hours for their reviews and discussions, without which we could not have realized our vision of technical excellence. Further, I thank the CollaborateCom 2016 Conference Committee, who provided invaluable assistance in the paper-review process and various other places that a successful conference requires. Finally, and most of all, the entire committee acknowledges the contributions of the authors who submitted their high-quality work, for without community support the conference would not happen.

Organization

General Chair and Co-chairs

Shanguang Wang Beijing University of Posts and Telecommunications, Beijing, China
Zibin Zheng Sun Yat-sen University, China
Xuanzhe Liu Peking University, China

TPC Co-chairs

Ao Zhou Beijing University of Posts and Telecommunications, China
Yutao Ma Wuhan University, China
Mingdong Tang Hunan University of Science and Technology, China

Workshop Chairs

Shuiguang Deng Zhejiang University, China
Sherry Xu CSIRO, China

Local Arrangements Chairs

Ruisheng Shi Beijing University of Posts and Telecommunications, China
Jialei Liu Beijing University of Posts and Telecommunications, China

Publication Chairs

Shizhan Chen Tianjing University, China
Yucong Duan Hainan University, China
lingyan Zhang Beijing University of Posts and Telecommunications, China

Social Media Chairs

Xin Xin Beijing Institute of Technology, China
Jinliang Xu Beijing University of Posts and Telecommunications, China

Website Chair

Songtai Dai Beijing University of Posts and Telecommunications, China

Conference Manager

Lenka Laukova EAI - European Alliance for Innovation, China

Contents

Default Track

Web APIs Recommendation for Mashup Development Based on Hierarchical Dirichlet Process and Factorization Machines	3
<i>Buqing Cao, Bing Li, Jianxun Liu, Mingdong Tang, and Yizhi Liu</i>	
A Novel Hybrid Data Mining Framework for Credit Evaluation	16
<i>Yatao Yang, Zibin Zheng, Chunzhen Huang, Kunmin Li, and Hong-Ning Dai</i>	
Parallel Seed Selection for Influence Maximization Based on k -shell Decomposition	27
<i>Hong Wu, Kun Yue, Xiaodong Fu, Yujie Wang, and Weiyi Liu</i>	
The Service Recommendation Problem: An Overview of Traditional and Recent Approaches	37
<i>Yali Zhao and Shangguang Wang</i>	
Gaussian LDA and Word Embedding for Semantic Sparse Web Service Discovery	48
<i>Gang Tian, Jian Wang, Ziqi Zhao, and Junju Liu</i>	
Quality-Assure and Budget-Aware Task Assignment for Spatial Crowdsourcing	60
<i>Qing Wang, Wei He, Xinjun Wang, and Lizhen Cui</i>	
Collaborative Prediction Model of Disease Risk by Mining Electronic Health Records	71
<i>Shuai Zhang, Lei Liu, Hui Li, and Lizhen Cui</i>	
An Adaptive Multiple Order Context Huffman Compression Algorithm Based on Markov Model	83
<i>Yonghua Huo, Zhihao Wang, Junfang Wang, Kaiyang Qu, and Yang Yang</i>	
Course Relatedness Based on Concept Graph Modeling	94
<i>Pang Jingwen, Cao Qinghua, and Sun Qing</i>	
Rating Personalization Improves Accuracy: A Proportion-Based Baseline Estimate Model for Collaborative Recommendation	104
<i>Zhenhua Tan, Liangliang He, Hong Li, and Xingwei Wang</i>	

A MapReduce-Based Distributed SVM for Scalable Data Type Classification	115
<i>Chong Jiang, Ting Wu, Jian Xu, Ning Zheng, Ming Xu, and Tao Yang</i>	
A Method of Recovering HBase Records from HDFS Based on Checksum File	127
<i>Lin Zeng, Ming Xu, Jian Xu, Ning Zheng, and Tao Yang</i>	
A Continuous Segmentation Algorithm for Streaming Time Series	140
<i>Yupeng Hu, Cun Ji, Ming Jing, Yiming Ding, Shuo Kuai, and Xueqing Li</i>	
Geospatial Streams Publish with Differential Privacy	152
<i>Yiwen Nie, Liusheng Huang, Zongfeng Li, Shaowei Wang, Zhenhua Zhao, Wei Yang, and Xiaorong Lu</i>	
A More Flexible SDN Architecture Supporting Distributed Applications	165
<i>Wen Wang, Cong Liu, and Jun Wang</i>	
Real-Time Scheduling for Periodic Tasks in Homogeneous Multi-core System with Minimum Execution Time	175
<i>Ying Li, Jianwei Niu, Jiong Zhang, Mohammed Atiquzzaman, and Xiang Long</i>	
Sweets: A Decentralized Social Networking Service Application Using Data Synchronization on Mobile Devices	188
<i>Rongchang Lai and Yasushi Shinjo</i>	
LBDAG-DNE: Locality Balanced Subspace Learning for Image Recognition	199
<i>Chuntao Ding and Qibo Sun</i>	
Collaborative Communication in Multi-robot Surveillance Based on Indoor Radio Mapping	211
<i>Yunlong Wu, Bo Zhang, Xiaodong Yi, and Yuhua Tang</i>	
How to Win Elections	221
<i>Abdallah Sobehy, Walid Ben-Ameur, Hossam Afifi, and Amira Bradai</i>	
Research on Short-Term Prediction of Power Grid Status Data Based on SVM	231
<i>Jianjun Su, Yi Yang, Danfeng Yan, Ye Tang, and Zongqi Mu</i>	
An Effective Buffer Management Policy for Opportunistic Networks	242
<i>Yin Chen, Wenbin Yao, Ming Zong, and Dongbin Wang</i>	
Runtime Exceptions Handling for Collaborative SOA Applications	252
<i>Bin Wen, Ziqiang Luo, and Song Lin</i>	

Data-Intensive Workflow Scheduling in Cloud on Budget
and Deadline Constraints 262
Zhang Xin, Changze Wu, and Kaigui Wu

PANP-GM: A Periodic Adaptive Neighbor Workload Prediction Model
Based on Grey Forecasting for Cloud Resource Provisioning 273
Yazhou Hu, Bo Deng, Fuyang Peng, Dongxia Wang, and Yu Yang

Dynamic Load Balancing for Software-Defined Data Center Networks 286
Yun Chen, Weihong Chen, Yao Hu, Lianming Zhang, and Yehua Wei

A Time-Aware Weighted-SVM Model for Web Service QoS Prediction 302
Dou Kai, Guo Bin, and Li Kuang

An Approach of Extracting Feature Requests from App Reviews 312
Zhenlian Peng, Jian Wang, Keqing He, and Mingdong Tang

QoS Prediction Based on Context-QoS Association Mining 324
Yang Hu, Qibo Sun, and Jinglin Li

Collaborate Algorithms for the Multi-channel Program Download Problem
in VOD Applications. 333
Wenli Zhang, Lin Yang, Kepi Zhang, and Chao Peng

Service Recommendation Based on Topics and Trend Prediction 343
Lei Yu, Zhang Junxing, and Philip S. Yu

Real-Time Dynamic Decomposition Storage of Routing Tables. 353
*Wenlong Chen, Lijing Lan, Xiaolan Tang, Shuo Zhang,
and Guangwu Hu*

Routing Model Based on Service Degree and Residual Energy in WSN. 363
Zhenzhen Sun, Wenlong Chen, Xiaolan Tang, and Guangwu Hu

Abnormal Group User Detection in Recommender Systems
Using Multi-dimension Time Series. 373
*Wei Zhou, Junhao Wen, Qingyu Xiong, Jun Zeng, Ling Liu, Haini Cai,
and Tian Chen*

Dynamic Scheduling Method of Virtual Resources Based
on the Prediction Model. 384
Dongju Yang, Chongbin Deng, and Zhuofeng Zhao

A Reliable Replica Mechanism for Stream Processing 397
Weilong Ding, Zhuofeng Zhao, and Yanbo Han

Exploring External Knowledge Base for Personalized Search
in Collaborative Tagging Systems 408
Dong Zhou, Xuan Wu, Wenyu Zhao, Séamus Lawless, and Jianxun Liu

Energy-and-Time-Saving Task Scheduling Based on Improved Genetic
Algorithm in Mobile Cloud Computing 418
Jirui Li, Xiaoyong Li, and Rui Zhang

A Novel Service Recommendation Approach Considering
the User’s Trust Network 429
*Guoqiang Li, Zibin Zheng, Haifeng Wang, Zifen Yang, Zuoping Xu,
and Li Liu*

3-D Design Review System in Collaborative Design of Process Plant 439
Jian Zhou, Linfeng Liu, Yunyun Wang, Fu Xiao, and Weiqing Tang

Industry Track Papers

Review of Heterogeneous Wireless Fusion in Mobile 5G Networks:
Benefits and Challenges 453
*Yuan Gao, Ao Hong, Quan Zhou, Zhaoyang Li, Weigui Zhou,
Shaochi Cheng, Xiangyang Li, and Yi Li*

Optimal Control for Correlated Wireless Multiview Video Systems 462
Yi Chen and Ge Gao

A Grouping Genetic Algorithm for Virtual Machine Placement
in Cloud Computing 468
Hong Chen

Towards Scheduling Data-Intensive and Privacy-Aware
Workflows in Clouds 474
Yiping Wen, Wanchun Dou, Buqing Cao, and Congyang Chen

Spontaneous Proximity Clouds: Making Mobile Devices to Collaborate
for Resource and Data Sharing 480
Roya Golchay, Frédéric Le Mouël, Julien Ponge, and Nicolas Stouls

E-commerce Blockchain Consensus Mechanism for Supporting
High-Throughput and Real-Time Transaction 490
*Yuqin Xu, Qingzhong Li, Xingpin Min, Lizhen Cui, Zongshui Xiao,
and Lanju Kong*

Security Testing of Software on Embedded Devices Using x86 Platform 497
Yesheng Zhi, Yuanyuan Zhang, Juanru Li, and Dawu Gu

DRIS: Direct Reciprocity Based Image Score Enhances Performance
in Collaborate Computing System 505
Kun Lu, Shiyu Wang, and Qilong Zhen

Research on Ant Colony Clustering Algorithm Based
on HADOOP Platform. 514
*Zhihao Wang, Yonghua Huo, Junfang Wang, Kang Zhao,
and Yang Yang*

Recommendflow: Use Topic Model to Automatically Recommend Stack
Overflow Q&A in IDE 521
Sun Fumin, Wang Xu, Sun Hailong, and Liu Xudong

CrowdEV: Crowdsourcing Software Design and Development 527
Duan Wei

Cloud Computing-based Enterprise XBRL Cross-Platform
Collaborated Management 533
Liwen Zhang

Alleviating Data Sparsity in Web Service QoS Prediction by Capturing
Region Context Influence. 540
Zhen Chen, Limin Shen, Dianlong You, Feng Li, and Chuan Ma

A Participant Selection Method for Crowdsensing Under
an Incentive Mechanism. 557
Wei Shen, Shu Li, Jun Yang, Wanchun Dou, and Qiang Ni

A Cluster-Based Cooperative Data Transmission in VANETs. 563
Qi Fu, Anhua Chen, Yunxia Jiang, and Mingdong Tang

Accurate Text Classification via Maximum Entropy Model 569
Baoping Zou

Back-Propagation Neural Network for QoS Prediction
in Industrial Internets. 577
Hong Chen

AndroidProtect: Android Apps Security Analysis System. 583
Tong Zhang, Tao Li, Hao Wang, and Zhijie Xiao

Improvement of Decision Tree ID3 Algorithm 595
Lin Zhu and Yang Yang

A Method on Chinese Thesauri. 601
Fu Chen, Xi Liu, Yuemei Xu, Miaohua Xu, and Guangjun Shi

Formal Modelling and Analysis of TCP for Nodes
Communication with ROS 609
Xiaojuan Li, Yanyan Huo, Yong Guan, Rui Wang, and Jie Zhang

On Demand Resource Scheduler Based on Estimating Progress
of Jobs in Hadoop. 615
Liangzhang Chen, Jie Xu, Kai Li, Zhonghao Lu, Qi Qi, and Jingyu Wang

Investigation on the Optimization for Storage Space in Register-Spilling 627
Guohui Li, Yonghua Hu, Yaqiong Qiu, and Wenti Huang

An Improvement Direction for the Simple Random Walk Sampling:
Adding Multi-homed Nodes and Reducing Inner Binatate Nodes. 634
*Bo Jiao, Ronghua Guo, Yican Jin, Xuejun Yuan, Zhe Han,
and Fei Huang*

Detecting False Information of Social Network in Big Data 642
*Yi Xu, Furong Li, Jianyi Liu, Ru Zhang, Yuangang Yao,
and Dongfang Zhang*

**Security and Privacy in Collaborative System: Workshop
on Multivariate Big Data Collaborations in Meteorology
and Its Interdisciplines**

Image Location Algorithm by Histogram Matching 655
Xiaoqiang Zhang and Junzhang Gao

Generate Integrated Land Cover Product for Regional Climate Model
by Fusing Different Land Cover Products 665
Hao Gao, Gensuo Jia, and Yu Fu

**Security and Privacy in Collaborative System: Workshop
on Social Network Analysis**

A Novel Social Search Model Based on Clustering Friends in LBSNs. 679
Yang Sun, Jiuxin Cao, Tao Zhou, and Shuai Xu

Services Computing for Big Data: Challenges and Opportunities. 690
Gang Huang

Author Index 697