

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

TU Dortmund University, Germany

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max Planck Institute for Informatics, Saarbruecken, Germany

Weihong Han Zi Huang Changjun Hu
Hongli Zhang Li Guo (Eds.)

Web Technologies and Applications

APWeb 2014 Workshops
SNA, NIS, and IoTS
Changsha, China, September 5, 2014
Proceedings

Volume Editors

Wei hong Han
National University
of Defense Technology
Changsha, China
E-mail: hanweihong@gmail.com

Zi Huang
University of Queensland
Brisbane, QLD, Australia
E-mail: huang@itee.uq.edu.au

Changjun Hu
University of Science and Technology
Beijing, China
E-mail: huchangjun@ies.ustb.edu.cn

Hongli Zhang
Harbin Institute of Technology
Harbin, China
E-mail: zhanghongli@hit.edu.cn

Li Guo
Chinese Academy of Sciences
Beijing, China
E-mail: guoli@iie.ac.cn

ISSN 0302-9743
ISBN 978-3-319-11118-6
DOI 10.1007/978-3-319-11119-3
Springer Cham Heidelberg New York Dordrecht London

e-ISSN 1611-3349
e-ISBN 978-3-319-11119-3

Library of Congress Control Number: 2014947545

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

© Springer International Publishing Switzerland 2014

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. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

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.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Message from the APWeb 2014 Workshop Chairs

It is our great pleasure to welcome you to the proceedings of the 16th APWeb workshops. APWeb is a leading international conference on research, development, and applications of Web technologies, database systems, information management, and software engineering. This year, we have three workshops held in conjunction with the main conference, which include

- First International Workshop on Social Network Analysis (SNA 2014)
- First International Workshop on Network and Information Security (NIS 2014)
- First International Workshop on Internet of Things Search (IoTS 2014)

The goal of these workshops is to promote the new research directions and applications, especially on social network analysis, security, and information retrieval against the heterogeneous big data. After a series of evaluation process conducted by the workshop Program Committee members, the workshop program features 34 papers with two invited papers among 59 submissions. All papers were presented in the workshop session at the main conference, held in Changsha, China on September 5, 2014.

We would like to thank the authors for choosing APWeb workshops as a venue for publishing their high quality papers and the Program Committee members for their timely reviews of the papers. We are also very grateful to the workshop organizers from the University of Science & Technology Beijing, Harbin Institute of Technology and Institute of Information Engineering CAS, China for their essential efforts on paper selecting and program organizing. Furthermore, we also gratefully acknowledge the support of the main conference organizers for their great effort in supporting the workshop program.

Finally, we hope that you enjoy reading the proceedings of the APWeb 2014 workshops.

July 2014

WeiHong Han
Zi Huang

Organization

Executive Committee

Workshops Co-chairs

| | |
|-------------|---|
| Weihong Han | National University of Defense Technology, China |
| Zi Huang | University of Queensland, Australia |

First International Workshop on Social Network Analysis (SNA 2014)

Steering Scientists

| | |
|--------------|--|
| Fang Binxing | Beijing University of Posts and Telecommunications, China |
| Jia Yan | National University of Defense Technology, China |

First International Workshop on Network and Information Security (NIS 2014)

Steering Scientists

| | |
|--------------|--|
| Fang Binxing | Beijing University of Posts and Telecommunications, China |
|--------------|--|

First International Workshop on Internet of Things Search (IOTS 2014)

Program Committee Chairs

| | |
|--------------|---|
| Hu Changjun | University of Science & Technology Beijing, China |
| Zhang Hongli | Harbin Institute of Technology, China |
| Guo Li | Institute of Information Engineering, Chinese Academy of Sciences, China |

Program Committee

SNA 2014

| | |
|---------------|--|
| Li Yuxiao | Beijing University of Posts and Telecommunications, China |
| Qi Jiayin | Beijing University of Posts and Telecommunications, China |
| Wu Bin | Beijing University of Posts and Telecommunications, China |
| Cheng Xueqi | Institute of Computing Technology, Chinese Academy of Sciences, China |
| Yu Zhihua | Institute of Computing Technology, Chinese Academy of Sciences, China |
| Li Jianhua | Shanghai Jiaotong University, China |
| Xie Gengtan | Shanghai Jiaotong University, China |
| Pan Li | Shanghai Jiaotong University, China |
| Huang Heyan | Beijing Institute of Technology, China |
| Liao Lejian | Beijing Institute of Technology, China |
| Zhang Huaping | Beijing Institute of Technology, China |
| Wu Xindong | University of Vermont, USA and Hefei University of Technology, China |
| Liu Yezheng | Hefei University of Technology, China |
| Xu Jin | Peking University, China |
| Shi Peng | University of Science & Technology Beijing, China |
| Zhu Yan | University of Science & Technology Beijing, China |
| Sun Chang-ai | University of Science & Technology Beijing, China |
| He Xiao | University of Science & Technology Beijing, China |
| Hu Yue | Institute of Information Engineering, Chinese Academy of Sciences, China |

NIS 2014

| | |
|---------------|--|
| Wang Jilong | Tsinghua University, China |
| Hu Liang | Jilin University, China |
| Du Yuejin | CNCERT/CC, China |
| Chen Xingshu | Sichuang University, China |
| Zhou Bin | National University of Defense Technology, China |
| Du Xiangjiang | Temple University, USA |
| Chen Tingting | Oklahoma State University, USA |

| | |
|---------------|---|
| Wu Zhigang | Beijing University of Posts and Telecommunications, China |
| Shi Jinqiao | Institute of Information Engineering, Chinese Academy of Sciences, China |
| Jin Shuyuan | Institute of Computing Technology, Chinese Academy of Sciences, China |
| Xue Jingfeng | Beijing Institute of Technology, China |
| Zhang Zhaoxin | Harbin Institute of Technology at Weihai, China |

IoTS 2014

| | |
|----------------|---|
| Aiping Li | National University of Defense Technology, China |
| Bin Wang | Institute of Computing Technology, Chinese Academy of Sciences, China |
| Fenghua Li | Institute of Information Engineering, Chinese Academy of Sciences, China |
| Hanhua Chen | Huazhong University of Science & Technology, China |
| Jiaheng Lu | Renmin University of China |
| Jiangang Ma | Victoria University, Australia |
| Lan Chen | Institute of Microelectronics of China Academy of Sciences |
| Lihua Yin | Institute of Information Engineering, Chinese Academy of Sciences, China |
| Limin Sun | Institute of Information Engineering, Chinese Academy of Sciences, China |
| Nenghai Yu | University of Science and Technology of China |
| Peng Zhang | Institute of Information Engineering, Chinese Academy of Sciences, China |
| Xiangzhan Yu | Harbin Institute of Technology, China |
| Xiaotong Zhang | University of Science & Technology Beijing, China |
| Xiaoyong Li | Beijing University of Posts and Telecommunications, China |

Table of Contents

First International Workshop on Social Network Analysis (SNA 2014)

| | |
|---|-----|
| Sentiment Analysis Based Online Restaurants Fake Reviews Hype Detection | 1 |
| <i>Xiaolong Deng and Runyu Chen</i> | |
| A Hybrid Method of Sentiment Key Sentence Identification Using Lexical Semantics and Syntactic Dependencies | 11 |
| <i>Chong Feng, Chun Liao, Zhirun Liu, and Heyan Huang</i> | |
| Influence Maximization in Independent Cascade Model with Limited Propagation Distance | 23 |
| <i>Shunming Lv and Li Pan</i> | |
| Online Social Network Model Based on Local Preferential Attachment | 35 |
| <i>Yang Yang, Shuyuan Jin, Yang Zuo, and Jin Xu</i> | |
| Temporal Curve Patterns Discovery of Information in BBS | 47 |
| <i>Yanyu Yu, Yue Hu, and Ge Li</i> | |
| Understanding Popularity Evolution Patterns of Hot Topics Based on Time Series Features | 58 |
| <i>Changjun Hu, Ying Hu, Wenwen Xu, Peng Shi, and Shushen Fu</i> | |
| VxBPEL-ODE: A Variability Enhanced Service Composition Engine ... | 69 |
| <i>Chang-Ai Sun, Pan Wang, Xin Zhang, and Marco Aiello</i> | |
| Predicting User Likes in Online Media Based on Conceptualized Social Network Profiles | 82 |
| <i>Qiang Liu, Yuanzhuo Wang, Jingyuan Li, Yantao Jia, and Yan Ren</i> | |
| Demographic Prediction of Online Social Network Based on Epidemic Model | 93 |
| <i>Xiang Zhu, Yuanping Nie, and Aiping Li</i> | |
| Analysis on Chinese Microblog Sentiment Based on Syntax Parsing and Support Vector Machine | 104 |
| <i>Ziyan Su, Bin Zhou, Aiping Li, and Yi Han</i> | |
| A Parallel and Scalable Framework for Non-overlapping Community Detection Algorithms | 115 |
| <i>Songchang Jin, Yuchao Zhang, Yuanping Nie, Xiang Zhu, Hong Yin, Aiping Li, and Shuqiang Yang</i> | |

| | |
|--|-----|
| Microblog Sentiment Analysis Model Based on Emoticons | 127 |
| <i>Shaojie Pei, Lumin Zhang, and Aiping Li</i> | |
| Detect and Analyze Flu Outlier Events via Social Network | 136 |
| <i>Quanquan Fu, Changjun Hu, Wenwen Xu, Xiao He, and Tieshan Zhang</i> | |

First International Workshop on Network and Information Security (NIS 2014)

| | |
|---|-----|
| An Advanced Spam Detection Technique Based on Self-adaptive Piecewise Hash Algorithm | 148 |
| <i>Junxing Zhu and Aiping Li</i> | |
| DNFStore: A Distributed Netflow Storage System Supports Fast Retrieval | 158 |
| <i>Fengguang Gong, Wenting Huang, Hao Luo, and Hailong Zhu</i> | |
| A Novel Road Topology-Aware Routing in VANETs | 167 |
| <i>Hongli Zhang and Qiang Zhang</i> | |
| Toward Identifying and Understanding User-Agent Strings in HTTP Traffic | 177 |
| <i>Ye Xu, Gang Xiong, Yong Zhao, and Li Guo</i> | |
| Cloud-Oriented SAT Solver Based on Obfuscating CNF Formula | 188 |
| <i>Ying Qin, Shengyu Shen, Jingzhu Kong, and Huadong Dai</i> | |
| The Improved AC High-Performance Pattern-Matching Algorithm for Intrusion Detection | 200 |
| <i>Dongliang Xu, Hongli Zhang, and Miao Hou</i> | |
| The Research of Partitioning Model Based on Virtual Identity Data | 214 |
| <i>Lu Deng, Weihong Han, Aiping Li, and Yong Quan</i> | |
| Implementation of Cyber Security Situation Awareness Based on Knowledge Discovery with Trusted Computer | 225 |
| <i>Jiemei Zeng, Xuewei Feng, Dongxia Wang, and Lan Fang</i> | |
| NNSDS: Network Nodes' Social Attributes Discovery System Based on Netflow | 235 |
| <i>Shuo Mao, Zhigang Wu, Bo Sun, Shoufeng Cao, Xiongjie Du, and Kaifeng Wang</i> | |
| A Survey of Network Attacks Based on Protocol Vulnerabilities | 246 |
| <i>Gang Xiong, Jiayin Tong, Ye Xu, Hongliang Yu, and Yong Zhao</i> | |
| Evaluation Scheme for Traffic Classification Systems | 258 |
| <i>Yong Zhao, Yuan Yuan, Yong Wang, Yao Yao, and Gang Xiong</i> | |

| | |
|--|-----|
| Winnowing Multihashing Structure with Wildcard Query | 265 |
| <i>Yichen Wei, Xu Fei, Xiaojun Chen, Jinqiao Shi, and Sihan Qing</i> | |

First International Workshop on Internet of Things Search (IOTS 2014)

| | |
|---|-----|
| Efficient IEEE 802.15.4 AHB Slave of Security Accelerator in Wireless Sensor Networks | 282 |
| <i>Rui Chen, Lan Chen, and Ying Li</i> | |

| | |
|---|-----|
| A Survey of Role Mining Methods in Role-Based Access Control System | 291 |
| <i>Liang Fang and Yunchuan Guo</i> | |

| | |
|--|-----|
| A Modified- k -Anonymity Towards Spatial-Temporal Historical Data in Location-Based Social Network Service | 301 |
| <i>Chao Lee, Li-Hua Yin, and Lan Dong</i> | |

| | |
|---|-----|
| A General Framework of Nonleakage-Based Authentication Using CSP for the Internet of Things | 312 |
| <i>Licai Liu, Bingxing Fang, and Beiting Yi</i> | |

| | |
|--|-----|
| A Security Routing Mechanism against Sybil Attacks in Mobile Social Networks | 325 |
| <i>Yan Sun and Lihua Yin</i> | |

| | |
|--|-----|
| Attribute-Role-Based Hybrid Access Control in the Internet of Things | 333 |
| <i>Kaiwen Sun and Lihua Yin</i> | |

| | |
|--|-----|
| A Dynamic Feature-Based Security Detector in Wireless Sensor Network Transceiver | 344 |
| <i>Xin Tong, Jikang Xia, Lan Chen, and Ying Li</i> | |

| | |
|--|-----|
| A Highly Adaptable Reputation System Based on Dirichlet Distribution | 353 |
| <i>Xia Xiao, Lan Chen, and Ying Li</i> | |

| | |
|--|-----|
| Research on Covert Channels Based on Multiple Networks | 365 |
| <i>Dongyan Zhang, Pingxin Du, Zhiwen Yang, and Lan Dong</i> | |

| | |
|---|-----|
| Detecting Insider Threat Based on Document Access Behavior Analysis | 376 |
| <i>Rui Zhang, Xiaojun Chen, Jinqiao Shi, Fei Xu, and Yiguo Pu</i> | |

| | |
|---|-----|
| Enhanced Sample Selection for SVM on Face Recognition | 388 |
| <i>Xiaofei Zhou, Wenhan Jiang, and Jianlong Tan</i> | |

| | |
|---------------------------|-----|
| Author Index | 403 |
|---------------------------|-----|