Advances in Intelligent Systems and Computing

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Preface

Data mining, machine learning as well as data networks and communication are the key areas of information technology—a field in which massive changes and challenges have occurred within the last few years while significantly influencing other areas of daily life. Progress is made not only in designated, separate research areas, but also by interdisciplinary influences among them. Of course, these rapid developments in research and daily life came about by the massive utilisation of the Internet, which enables to create and store an already huge and permanently growing pile of (raw) data generated by millions of users from different locations. Obtaining knowledge or wisdom from them becomes an increasingly tedious task and depends on the opportunities to combine user activities and requests with the data representing the requested information from the right locations at desired times. If the necessary network and data mining activities can successfully be carried out, great achievements for businesses, governments and academia can be realised on the one hand, but on the other hand dangers for people and society at large may arise.

The chapters of this book contain the main, well-selected and reviewed contributions of scientists who met at the 12th International Conference on Computing and Information Technology in recognition of the importance to expand and improve the current technologies. There are three main sections in this book representing the three main directions in the recent developments of data mining and computer networking.

Since most activities originate are made on behalf of or directly controlled by users, and since 80 % of all contents in the World Wide Web are text-based, aspects of User Centric Data Mining and Text Processing are the topic of the first chapter, besides classical text-mining, picture and video processing, handwriting recognition and audio processing methods, which become more and more important in our multimedia world.

Data Mining Algorithms and Their Application constitute the key technology to elicit desired information in a reasonable amount of time and stand, and therefore become the focus of this book's considerations. Applications from industry,

business, medicine and engineering give an idea of the always-present and everything-penetrating character of these technologies.

Finally, as the big breakthrough of information technology has been caused by the Internet and modern communication technologies, which allow to access data anywhere in the world in extremely short times, Optimisation of Complex Networks must ensure that the required speed of data access and transfer can be also guaranteed in the future. In this context, Cloud Computing and Security are the central issues of recent developments and need to be understood and applied in a right and efficient manner.

With going through the chapters of this book, we hope that readers, especially researchers, will be able to find novel contributions on state-of-the-art technologies for data mining, machine learning and data networking. Beginners or research students should be able to grasp basic ideas, as well as to gain fundamental knowledge.

The book was prepared with the combined effort of the staff of the Faculty of Information Technology at King Mongkut's University of Technology North Bangkok. We also would like to thank Ms. Watchareewan Jitsakul, whose work has been very valuable to the success of the publishing process. Finally, we are grateful to Springer-Verlag for the support provided and for agreeing to publish this book.

Bangkok, Thailand
March 2016

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Contents

Part I Invited Paper

Cloud Computing: New Paradigms and Challenges	3
Djamshid Tavangarian	

Part II User Centric Data Mining and Text Processing

User-Triggered Structural Changes in OSN-Alike Distributed Content Networks	7
Hauke Coltzau and Mario Kubek	

Modeling Disease Spread at Global Mass Gatherings: Data Requirements and Challenges	17
Sultanah M. Alshammari and Armin R. Mikler	

Concept-Based Sentiment Analysis for Opinion Texts with Multiple-Languages	27
Jantima Polpinij, Natthakit Srikanjanapert and Chetarin Wongsin	

Automatic Advisor for Detecting Summarizable Chat Conversations in Online Instant Messages	37
Fajri Koto and Omar Abdillah	

Optical Character Recognition for Nepali, English Character and Simple Sketch Using Neural Network	45
Subarna Shakya, Abinash Basnet, Suman Sharma and Amar Bdr Gurung	

Segmentation of Overlapping Isan Dhamma Character on Palm Leaf Manuscript's with Neural Network	55
Mahasak Ketcham, Worawut Yimyan and Narumol Chumuang	

Comparative Results of Attribute Reduction Techniques for Thai Handwritten Recognition with Support Vector Machines	67
Tanasanee Phienthrakul and Massaya Samnienggam	

Human Action Invarianceness for Invarianceness Using Integration Moment for Human Action Recognition in Video	79
Nilam Nur Amir Sjarif, Siti Mariyam Shamsuddin, Siti Zaiton Mohd Hashim, Aida Ali and Zanariah Zainudin	
Part III Data Mining Algorithms and Their Applications	
Parallel Shallow Water Simulations by Finite Volume Method with CUDA	95
Kedsararat Khawyuen, Worasait Suwannik and Montri Maleewong	
Intrusion Detection System Based on Cost Based Support Vector Machine	105
Md. Rafiul Hassan	
Predicting Quality-Assured Consensual Answers in Community-Based Question Answering Systems.	117
Krissada Maleewong	
Influence of ERP Employment on Work Skills.	129
Suphan Petyim, Bunthit Watanapa, Nipon Charoenkitkarn and Jidapa Archanainant	
Electrocardiogram Identification: Use a Simple Set of Features in QRS Complex to Identify Individuals	139
Tuerxunwaili, Rizal Mohd Nor, Abdul Wahab Bin Abdul Rahman, Khairul Azami Sidek and Adamu Abubakar Ibrahim	
The Research on Improving Algorithms for Hilltop to Improve Search Quality	149
Peng Lu and Xiao Cong	
A Fast Outlier Detection Algorithm for Big Datasets	159
Duong van Hieu and Phayung Meesad	
Fast Computing of Microarray Data Using Resilient Distributed Dataset of Apache Spark.	171
Ransingh Biswajit Ray, Mukesh Kumar and Santanu Kumar Rath	
Heuristic Search Algorithms for Constructing Optimal Latin Hypercube Designs	183
Anamai Na-udom and Jaratsri Rungrattanaubol	
A Hybrid Multi-objective Genetic Algorithm with a New Local Search Approach for Solving the Post Enrolment Based Course Timetabling Problem	195
Dome Lohpetch and Sawaphat Jaengchuea	

Part IV Optimisation of Complex Networks

Conceptual Framework: The Adaptive Biometrics Authentication for Accessing Cloud Computing Services Using iPhone.	209
Sorapak Pukdesree and Paniti Netinant	
An Insurmountable and Fail-Secure Network Interface	217
Wolfgang A. Halang, Panchalee Sukjit, Maytiyanin Komkhao and Sunantha Sodsee	
Finding an Optimal Parameter for Threshold Cryptography	223
Weena Janratchakool, Sirapat Boonkrong and Sucha Smanchat	
Effective Linear Transformation Matrices for Block Cipher Based on Bi-regular Matrix.	233
The Dung Luong	
A High Radix Hierarchical Interconnection Network for Network-on-Chip.	245
Mohammed N.M. Ali, M.M. Hafizur Rahman, Rizal Mohd Nor and Tengku Mohd Bin Tengku Sembok	
Prioritized Probabilistic Caching Algorithm in Content Centric Networks	255
Warit Sirichotedumrong, Wuttipong Kumwilaisak, Saran Tarnoi and Nattanun Thatphithakkul	
KSBS Solution of Power Allocation in Multi-user Multi-relay Networks Using Stackelberg Game	267
Supenporn Somjit, Pattarawit Polpinit and Chatchai Khunboa	
Energy-Distance Aware Clustering Scheme (E-DACS) for Wireless Sensor Networks	277
Abdullah Said Alkalbani, Teddy Mantoro and Satyanarayana Degala	
Fast Tracking Algorithm for Designed Marker	293
Teera Siriteerakul and Rutchanee Gullayanon	
Real-Time Control of Mobile Communication Channels	301
Mario M. Kubek and Herwig Unger	
E-Model Parameters Estimation for VoIP with Non-ITU Codec Speech Quality Prediction.	309
Tuul Triyason and Prasert Kanthamanon	
ICT Implementation and Infrastructure Deployment Approach for Rural Nepal	319
Babu Ram Dawadi and Subarna Shakya	
Author Index	333