Siuly Siuly · Ickjai Lee
Zhisheng Huang · Rui Zhou
Hua Wang · Wei Xiang (Eds.)

LNCS 11148

Health Information Science

7th International Conference, HIS 2018
Cairns, QLD, Australia, October 5–7, 2018
Proceedings

Springer

Lecture Notes in Computer Science **11148**

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison
Lancaster University, Lancaster, UK
Takeo Kanade
Carnegie Mellon University, Pittsburgh, PA, USA
Josef Kittler
University of Surrey, Guildford, UK
Jon M. Kleinberg
Cornell University, Ithaca, NY, USA
Friedemann Mattern
ETH Zurich, Zurich, Switzerland
John C. Mitchell
Stanford University, Stanford, CA, USA
Moni Naor
Weizmann Institute of Science, Rehovot, Israel
C. Pandu Rangan
Indian Institute of Technology Madras, Chennai, India
Bernhard Steffen
TU Dortmund University, Dortmund, 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, Saarbrücken, Germany

More information about this series at http://www.springer.com/series/7409

Siuly Siuly · Ickjai Lee
Zhisheng Huang · Rui Zhou
Hua Wang · Wei Xiang (Eds.)

Health Information Science

7th International Conference, HIS 2018
Cairns, QLD, Australia, October 5–7, 2018
Proceedings

Springer

Editors
Siuly Siuly
Victoria University
Footscray, VIC
Australia

Ickjai Lee
James Cook University
Cairns, QLD
Australia

Zhisheng Huang
Vrije University of Amsterdam
Amsterdam
The Netherlands

Rui Zhou
Swinburne University of Technology
Hawthorn, VIC
Australia

Hua Wang
Victoria University
Footscray, VIC
Australia

Wei Xiang
James Cook University
Cairns, QLD
Australia

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-01077-5 ISBN 978-3-030-01078-2 (eBook)
https://doi.org/10.1007/978-3-030-01078-2

Library of Congress Control Number: 2018955284

LNCS Sublibrary: SL3 – Information Systems and Applications, incl. Internet/Web, and HCI

© Springer Nature Switzerland AG 2018
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.

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

Preface

The International Conference Series on Health Information Science (HIS) provides a forum for disseminating and exchanging multidisciplinary research results in computer science/information technology and health science and services. It covers all aspects of health information sciences and systems that support health information management and health service delivery.

The 7th International Conference on Health Information Science (HIS 2018) was held in Cairns, Queensland, Australia, during October 5–7, 2018. Founded in April 2012 as the International Conference on Health Information Science and Their Applications, the conference continues to grow to include an ever-broader scope of activities. The main goal of these events is to provide international scientific forums for researchers to exchange new ideas in a number of fields that interact in depth through discussions with their peers from around the world. The scope of the conference includes: (1) medical/health/biomedicine information resources, such as patient medical records, devices and equipments, software and tools to capture, store, retrieve, process, analyze, and optimize the use of information in the health domain; (2) data management, data mining, and knowledge discovery, all of which play a key role in decision-making, management of public health, examination of standards, privacy and security issues; (3) computer visualization and artificial intelligence for computer-aided diagnosis; and (4) development of new architectures and applications for health information systems.

The conference solicited and gathered technical research submissions related to all aspects of the conference scope. All the submitted papers in the proceeding were peer reviewed by at least three international experts drawn from the Program Committee. After the rigorous peer-review process, a total of 13 full papers and five short papers among 43 submissions were selected on the basis of originality, significance, and clarity and were accepted for publication in the proceedings. The authors were from Australia, Bangladesh, China, Finland, Russia, and The Netherlands. Some authors were invited to submit extended versions of their papers to a special issue of the *Health Information Science and System* journal published by Springer.

The high quality of the program – guaranteed by the presence of an unparalleled number of internationally recognized top experts – in reflected the contents of the proceeding. The conference was therefore a unique event, where attendees were able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other fields. The program was structured to favor interactions among attendees coming from many different areas, scientifically and geographically, from academia and from industry.

We would like to sincerely thank our keynote and invited speaker:

– Professor Fernando Martin-Sanchez, FACMI, FACHI, CHIA, FIAHSI, Instituto de Salud Carlos III, Spain

Our thanks also go to the host organization, James Cook University, Australia. Finally, we acknowledge all those who contributed to the success of HIS 2018 but whose names are not listed here.

October 2018

Siuly Siuly
Ickjai Lee
Zhisheng Huang
Rui Zhou
Hua Wang
Wei Xiang

Organization

General Co-chairs

Yanchun Zhang	Victoria University, Australia and Fudan University, China
Wei Xiang	James Cook University, Australia
Uwe Aickelin	University of Melbourne, Australia

Program Co-chairs

Siuly Siuly	Victoria University, Australia
Ickjai Lee	James Cook University, Australia
Zhisheng Huang	Vrije Universiteit Amsterdam, The Netherlands

Conference Organization Chair

Hua Wang	Victoria University, Australia

Publicity Co-chairs

Juanying Xie	Shaanxi Normal University, China
Ji Zhang	University of Southern Queensland, Australia

Publication Chair

Rui Zhou	Swinburne University of Technology, Australia

Local Arrangements Chair

Lei Lei	James Cook University, Australia
Jiangang Ma	James Cook University, Australia

Webmaster

Sarathkumar Rangarajan	Victoria University, Australia

Program Committee

Uwe Aickelin	University of Melbourne, Australia
Omer Faruk Alçin	Bingöl University, Turkey
Jiang Bian	University of Florida, USA
Fei Chen	South University of Science and Technology, China

Soon Ae Chun	The City University of New York, USA
James Cimino	National Institutes of Health, USA
Licong Cui	University of Kentucky, USA
Grazziela Figueredo	University of Nottingham, UK
Yanhui Guo	University of Illinois Springfield, USA
Zhisheng Huang	Vrije Universiteit Amsterdam, The Netherlands
Du Huynh	University of Western Australia, Australia
Xia Jing	Ohio University, USA
Enamul Kabir	University of Southern Queensland, Australia
Ickjai Lee	James Cook University, Australia
Gang Luo	University of Washington, USA
Zhiyuan Luo	Royal Holloway, University of London, UK
Fernando Martin-Sanchez	Instituto de Salud Carlos III, Spain
Bridget Mcinnes	Virginia Commonwealth University, USA
Fleur Mougin	ERIAS, INSERM, U1219, Université de Bordeaux, France
Trina Myers	James Cook University, Australia
William Song	Dalarna University, Sweden
Weiqing Sun	University of Toledo, USA
Xiaohui Tao	University of Southern Queensland, Australia
Pasupathy Vimalachandran	Victoria University, Australia
Hua Wang	Victoria University, Australia
Jimin Wen	Guilin University of Electronic Technology, China
Wei Xiang	James Cook University, Australia
Ji Zhang	University of Southern Queensland, Australia
Rui Zhou	Swinburne University of Technology, Australia
Fengfeng Zhou	Jilin University, China

Additional Reviewers

Huang, Yan
Li, Xiaojin
Tao, Shiqiang
Wu, Xi
Yang, Xi
Zeng, Ningzhou
Zhu, Wei

Contents

Medical, Health, Biomedicine Information

Perceptions and Experiences of General Practice Users About MyHealthRecord 3
Urooj Raza Khan, Tanveer A. Zia, Chris Pearce, and Kaushalya Perera

Extraction of Semantic Relations from Medical Literature Based on Semantic Predicates and SVM 17
Xiaoli Zhao, Shaofu Lin, and Zhisheng Huang

Decision Making for Traditional Chinese Medicine Based on Fuzzy Cognitive Map 25
Daniel Lee, Huai Liu, Jia Rong, Hong Xu, and Yuan Miao

Accelerometer-Based Physical Activity Patterns and Correlates of Depressive Symptoms 37
Xia Li, Patricia M. Kearney, and Anthony P. Fitzgerald

Detection of Depression from Brain Signals: A Review Study 48
Prabhjyot Kaur, Siuly Siuly, and Yuan Miao

Artificial Intelligence for Computer-aided Diagnosis

Extreme Learning Machine Based Diagnosis Models for Erythemato-Squamous Diseases 61
Juanying Xie, Xinyuan Ji, and Mingzhao Wang

Sentiment Classification with Medical Word Embeddings and Sequence Representation for Drug Reviews 75
Sisi Liu and Ickjai Lee

Automatic Text Classification for Label Imputation of Medical Diagnosis Notes Based on Random Forest 87
Bokai Yang, Guangzhe Dai, Yujie Yang, Darong Tang, Qi Li, Denan Lin, Jing Zheng, and Yunpeng Cai

An Automated Approach for Clinical Quantitative Information Extraction from Chinese Electronic Medical Records 98
Shanshan Liu, Xiaoyi Pan, Boyu Chen, Dongfa Gao, and Tianyong Hao

A New Way of Channel Selection in the Motor Imagery Classification for BCI Applications 110
Md. A. Mannan Joadder, Siuly Siuly, and Enamul Kabir

Data Management, Data Mining, and Knowledge Discovery Mining

Mining Medical Periodic Patterns from Spatio-Temporal Trajectories. 123
Dongzhi Zhang, Kyungmi Lee, and Ickjai Lee

Text Mining and Real-Time Analytics of Twitter Data: A Case Study of Australian Hay Fever Prediction 134
Sudha Subramani, Sandra Michalska, Hua Wang, Frank Whittaker, and Benjamin Heyward

A Data-Intensive CDSS Platform Based on Knowledge Graph 146
Ming Sheng, Qingcheng Hu, Yong Zhang, Chunxiao Xing, and Tingting Zhang

Analysing the Impact of Electronic Health Records 156
Ziheng Wang

Development of New Architectures and Applications

Building Applications that Matter: Co-designing with Adolescents with Autism Spectrum Disorder 167
Randy Zhu, Dianna Hardy, and Trina Myers

Data Fusion Network for Instance Segmentation 175
Lifu Wang, Weinan Li, and Yan Kang

Intensity Thinking as a Shared Challenge in Consumer-Targeted eHealth 183
Marjo Rissanen

Web-Service Medical Messenger – Intelligent Algorithm of Remote Counseling 193
Nikita Shklovskiy-Kordi, Rostislav Borodin, Boris Zingerman, Michael Shifrin, Olga Kremenetskaya, and Andrei Vorobiev

Author Index 199