Mayank Singh · P. K. Gupta · Vipin Tyagi · Jan Flusser · Tuncer Ören · Gianluca Valentino (Eds.)

Communications in Computer and Information Science

1244

Advances in Computing and Data Sciences

4th International Conference, ICACDS 2020 Valletta, Malta, April 24–25, 2020 Revised Selected Papers





Mayank Singh · P. K. Gupta · Vipin Tyagi · Jan Flusser · Tuncer Ören · Gianluca Valentino (Eds.)

Advances in Computing and Data Sciences

4th International Conference, ICACDS 2020 Valletta, Malta, April 24–25, 2020 Revised Selected Papers





Editors Mayank Singh University of KwaZulu-Natal Durban, South Africa

Vipin Tyagi Jaypee University of Engineering and Technology Guna, Madhya Pradesh, India

Tuncer Ören University of Ottawa Ottawa, ON, Canada

P. K. Gupta Jaypee University of Information Technology Waknaghat, Himachal Pradesh, India

Jan Flusser Institute of Information Theory and Automation Prague, Czech Republic

Gianluca Valentino University of Malta Valletta, Malta

ISSN 1865-0929 ISSN 1865-0937 (electronic) Communications in Computer and Information Science ISBN 978-981-15-6633-2 ISBN 978-981-15-6634-9 (eBook) https://doi.org/10.1007/978-981-15-6634-9

© Springer Nature Singapore Pte Ltd. 2020
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, expressed 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 Singapore Pte Ltd. The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Organization

Steering Committee

Alexandre Carlos Brandão

UNIFEI, Brazil

Ramos

Mohit Singh

Georgia Institute of Technology, USA

H. M. Pandev

Edge Hill University, UK

M. N. Hooda S. K. Singh

BVICAM, India

Jyotsna Kumar Mandal

IIT BHU, India University of Kalyani, India

Ram Bilas Pachori

Indian Institute of Technology Indore, India

Chief Patron

Alfred Vella

University of Malta, Malta

Patron

Saviour Zammit

University of Malta, Malta

Honorary Chair

Carl J. Debono

University of Malta, Malta

General Chairs

Jan Flusser

Institute of Information Theory and Automation,

Czech Republic

Gianluca Valentino

University of Malta, Malta

Mayank Singh

University of KwaZulu-Natal, South Africa

Advisory Board Chairs

Shailendra Mishra

Majmaah University, Saudi Arabia

P. K. Gupta Vipin Tyagi JUIT, India

JUET, India

Technical Program Committee Chair

Tuncer Ören

University of Ottawa, Canada

Program Chairs

Viranjay M. Srivastava Ling Tok Wang Ulrich Klauck Anup Girdhar Arun Sharma University of KwaZulu-Natal, South Africa National University of Singapore, Singapore

Aalen University, Germany Sedulity Group, India IGDTUW, India

Conference Chair

Lalit Garg

University of Malta, Malta

Conference Co-chairs

Alexiei Dingli John Abela University of Malta, Malta University of Malta, Malta

Convener

Sameer Kumar Jasra

University of Malta, Malta

Co-conveners

Sandhya Tarar
Prathamesh Churi
Shikha Badhani
Lavanya Sharma
Arun Agarwal
Hemant Gupta
Gaurav Agarwal
Sahil Verma
Kavita

Rakesh Saini

Gautam Buddha University, India

NMIMS, India

Delhi University, India Amity University, India Delhi University, India Carleton University, Canada

Inderprastha Engineering College, India Lovely Professional University, India Lovely Professional University, India

DIT University, India

Organizing Chairs

Peter Xuereb Michel Camilleri Conrad Attard Lucienne May Bugeja University of Malta, Malta University of Malta, Malta University of Malta, Malta University of Malta, Malta

Organizing Co-chairs

Abhishek Dixit Vibhash Yadav Nishant Gupta Tallinn University of Technology, Estonia

REC Banda, India MGMCoET, India

Organizing Secretary

Akshay Kumar Consilio Intelligence Research Lab, India

Creative Head

Tarun Pathak Consilio Intelligence Research Lab, India

Organizing Committee

Lucienne May Bugeja University of Malta, Malta Conrad Attard University of Malta, Malta Michel Camilleri University of Malta, Malta Lalit Garg University of Malta, Malta Gianluca Valentino University of Malta, Malta Sameer Kumar Jasra University of Malta, Malta University of Malta, Malta Ila Tewari Jarsa Peter Xuereb University of Malta, Malta University of Malta, Malta Reuben Farrugia Akansha Singh

Consilio Intelligence Research Lab, India Neha Agarwal Consilio Intelligence Research Lab, India

JUET, India Kriti Tyagi

SK Info Techies, India Rohit Kapoor

Sponsored by

Consilio Intelligence Research Lab, India

Co-sponsored by

GISR Foundation, India Print Canvas, India SK Info Techies, India VGeekers, India

Contents

Advanced Computing

A Computer Vision Based Approach for the Analysis of Acuteness of Garbage	3
The Moderating Effect of Demographic Factors Acceptance Virtual Reality Learning in Developing Countries in the Middle East	12
Table Tennis Forehand and Backhand Stroke Recognition Based on Neural Network	24
An Effective Vision Based Framework for the Identification of Tuberculosis in Chest X-Ray Images	36
User Assisted Clustering Based Key Frame Extraction	46
A Threat Towards the Neonatal Mortality	56
Digital Marketing Effectiveness Using Incrementality	66
Explainable Artificial Intelligence for Falls Prediction	76
Enhanced UML Use Case Meta-model Semantics from Cognitive and Utility Perspectives	85
The Impact of Mobile Augmented Reality Design Implementation on User Engagement	96
Intelligent Mobile Edge Computing: A Deep Learning Based Approach Abhirup Khanna, Anushree Sah, and Tanupriya Choudhury	107

Analysis of Clustering Algorithms in Machine Learning for Healthcare Data	117
Securing Mobile Agents Migration Using Tree Parity Machine with New Tiny Encryption Algorithm	129
An Approach to Waste Segregation and Management Using Convolutional Neural Networks	139
Open Source Intelligence Initiating Efficient Investigation and Reliable Web Searching	151
A Neural Network Based Hybrid Model for Depression Detection in Twitter	164
Unleashing the VEP Triplet Count of Virtually Created 3D Bangla Alphabet to Integrate with Augmented Reality Application	176
A Hybrid Machine Learning Framework for Prediction of Software Effort at the Initial Phase of Software Development	187
Chronic Disease Prediction Using Deep Learning	201
A Deep Learning Based Method to Discriminate Between Photorealistic Computer Generated Images and Photographic Images	212
Load Balancing Algorithm in Cloud Computing Using Mutation Based PSO Algorithm	224
Statistical Model for Qualitative Grading of Milled Rice	234
Measuring the Effectiveness of Software Code Review Comments Syeda Sumbul Hossain, Yeasir Arafat, Md. Ekram Hossain, Md. Shohel Arman, and Anik Islam	247

Contents	xiii
Proposed Model for Feature Extraction for Vehicle Detection	258
Analysis of Feature Selection Methods for P2P Botnet Detection	272
ELM-MVD: An Extreme Learning Machine Trained Model for Malware Variants Detection	283
Real-Time Biometric System for Security and Surveillance Using Face Recognition	293
An Effective Block-Chain Based Authentication Technique for Cloud Based IoT	305
Early Detection of Autism Spectrum Disorder in Children Using Supervised Machine Learning	320
Anatomical Analysis Between Two Languages Alphabets: Visually Typographic Test Transformation in Morphological Approaches	330
Auto Segmentation of Lung in Non-small Cell Lung Cancer Using Deep Convolution Neural Network	340
Multiwavelet Based Unmanned Aerial Vehicle Thermal Image Fusion for Surveillance and Target Location	352
Investigating Movement Detection in Unedited Camera Footage Samuel Sciberras and Joseph G. Vella	362
Time Series Forecasting Using Machine Learning	372
Improving Packet Queues Using Selective Epidemic Routing Protocol in Opportunistic Networks (SERPO)	382

Heart Disease Prediction System Using Classification Algorithms	395
Data Sciences	
Graph Database and Relational Database Performance Comparison on a Transportation Network	407
Optimizing Creative Allocations in Digital Marketing	419
Big Data Analytics for Customer Relationship Management: A Systematic Review and Research Agenda	430
Agricultural Field Analysis Using Satellite Surface Reflectance Data and Machine Learning Technique	439
Sponsored Data Connectivity at the Network Edge	449
Dynamic Bidding with Contextual Bid Decision Trees in Digital Advertisement	463
MOOC Performance Prediction by Deep Learning from Raw Clickstream Data	474
UDHR - Unified Decentralized Health Repository	486
Mining Massive Time Series Data: With Dimensionality Reduction Techniques	496
Comparative Analysis of Data Mining Techniques to Predict Heart Disease for Diabetic Patients	507
Author Index	519

Communications in Computer and Information Science

The CCIS series is devoted to the publication of peer-reviewed proceedings of conferences and workshops. Its aim is to efficiently disseminate original research results in computer science. All CCIS proceedings are available in electronic form from the SpringerLink digital library, and as printed books, and reach libraries and readers worldwide via Springer's distribution network.

Besides globally relevant meetings with internationally representative program committees guaranteeing a strict peer-reviewing and paper-selection process, conferences run by societies or of high regional or national relevance are also considered for publication. Application-oriented and interdisciplinary conferences are also welcome.

The topical scope of CCIS spans the entire spectrum of computer science ranging from foundational topics in the theory of computing to information and communications science and technology and a broad variety of interdisciplinary application fields.

CCIS proceedings can be published in time for distribution at conferences or as revised proceedings after the event. The publication is free of charge and an Open Access option is available at a fee. The language of publication is exclusively English.

CCIS is abstracted/indexed in DBLP, Google Scholar, El-Compendex, Mathematical Reviews, SCImago, and Scopus. CCIS volumes are also submitted for inclusion in ISI Proceedings.

To start the evaluation of your proposal for inclusion in the CCIS series, please send an e-mail to ccis@springer.com.

ISSN 1865-0929



