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# Advances in Computing and Data Sciences

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

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# Preface

Computing techniques like Big Data, Cloud Computing, Machine learning, Internet of Things (IoT), etc. are playing a key role in the processing of data and retrieving of advanced information. Several state-of-art techniques and computing paradigms have been proposed based on these techniques. This volume contains papers presented at 4th International Conference on Advances in Computing and Data Sciences (ICACDS 2020) organized during April 24–25, 2020, by the Faculty of Information & Communication Technology, University of Malta, Malta. Due to the COVID-19 pandemic, ICACDS 2020 was organized virtually. The conference was organized specifically to help bring together researchers, academicians, scientists, and industry experts and to derive benefits from the advances of next generation computing technologies in the areas of Advanced Computing and Data Sciences.

The Program Committee of ICACDS 2020 is extremely grateful to the authors who showed an overwhelming response to the call for papers, with over 354 papers submitted in the two tracks of Advanced Computing and Data Sciences. All submitted papers went through double-blind peer-review process, and finally 46 papers were accepted for publication in Springer CCIS series. We are thankful to the reviewers for their efforts in finalizing the high-quality papers.

The conference featured many distinguished personalities like Prof. J. S. P. Rai, Vice Chancellor at Jaypee University of Engineering and Technology, India; Prof. Alfred J. Vella, Rector at the University of Malta, Malta; Prof. Ing. Saviour Zammit, Pro-Rector at the University of Malta, Malta; Dr. Neeraj Saxena, Advisor at the Policy & Academic Planning Bureau, AICTE, India; Prof. Shailendra Mishra, Majmaah University, Saudi Arabia; Prof. Viranjay M. Srivastava, University of KwaZulu-Natal, South Africa; Prof. Adrian Muscat, University of Malta, Malta; Prof. Ram Bilas Pachori, IIT Indore, India; Prof. Arun Sharma, Indira Gandhi Delhi Technical University for Women, India; Prof. Shashi Kant Dargar, University of KwaZulu-Natal, South Africa; Prof. Prathmesh Churi, NMIMS University, India; among many others. We are very grateful for the participation of all speakers in making this conference a memorable event.

The Organizing Committee of ICACDS 2020 is indebted to Prof. Ing. Carl James Debono, Dean Faculty of ICT, University of Malta, Malta, for the confidence that he gave to us during organization of this international conference, and all faculty members and staff of Faculty of Information & Communication Technology, University of Malta, for their support in organizing the conference and for making it a grand success.

We would also like to thank Mr. Sameer Kumar Jasra, University of Malta, Malta; Mr. Hemant Gupta, Carleton University, Canada; Mr. Nishant Gupta, MGM CoET, India; Mr. Arun Agarwal, Delhi University, India; Mr. Kunj Bihari Meena, JUET Guna, India; Dr. Neelesh Jain, JUET Guna, India; Dr. Nilesh Patel, JUET Guna, India; Dr. Vibhash Yadav, REC Banda, India; Dr. Sandhya Tarar, GBU Noida, India; Mr. Abhishek Dixit; Mr. Vipin Deval from Tallinn University of Technology, Estonia;

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Our sincere thanks to Consilio Intelligence Research Lab, India; the GISR Foundation, India; SK Info Techies, India; Print Canvas, India; and VGeekers, India; for sponsoring the event.

April 2020

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