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Intelligent Data Engineering and Automated Learning – IDEAL 2020

21st International Conference
Guimaraes, Portugal, November 4–6, 2020
Proceedings, Part II

Springer

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-62364-7 ISBN 978-3-030-62365-4 (eBook)
https://doi.org/10.1007/978-3-030-62365-4

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

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Preface

The International Conference on Intelligent Data Engineering and Automated Learning (IDEAL) is an annual international conference dedicated to emerging and challenging topics in intelligent data analytics and associated machine learning systems and paradigms. After the hugely successful IDEAL 2018 in Madrid, Spain, and its 20th edition in Manchester, UK, last year, IDEAL 2020 was hosted by the Synthetic Intelligence Lab (ISLab) from the ALGORITMI Center at the University of Minho, in Guimarães, the birthplace of Portugal, during November 4–6, 2020. It was also technically co-sponsored by the Portuguese Artificial Intelligence Association (APPIA) and the IEEE Computational Intelligence Society Portuguese Chapter. Due to the COVID-19 pandemic, the Organization Committee decided to hold the IDEAL 2020 completely online, to ensure the safety of the organization and the delegates of the conference.

This year marked the 21st edition of IDEAL, a conference series which has been serving an important role in data analytics and machine learning communities. The conference aims to bring researchers and practitioners together, share the latest knowledge, disseminate cutting-edge results, and forge alliances on tackling many real-world challenging problems. The core themes of the IDEAL 2020, as usual, included big data challenges, machine learning, data mining, information retrieval and management, bio-/neuro-informatics, bio-inspired models, agents and hybrid intelligent systems, real-world applications of intelligent techniques, and AI.

The IDEAL 2020 event consisted of the main track, nine special sessions, and one colocated workshop. These special sessions were:

– Special Session 1: Data Generation and Data Pre-processing in Machine Learning
– Special Session 2: Optimization and Machine Learning for Industry 4.0
– Special Session 3: Practical Applications of Deep Learning
– Special Session 4: New trends and challenges on Social Networks Analysis
– Special Session 5: Machine Learning in Automatic Control
– Special Session 6: Emerging Trends in Machine Learning
– Special Session 7: Machine Learning, Law and Legal Industry
– Special Session 8: Data Recovery Approach to Clustering and Interpretability
– Special Session 9: Automated learning for industrial applications

The colocated event was the Workshop on Machine Learning in Smart Mobility (MLSM 2020).

A total of 122 submissions were received and were then subjected to rigorous peer reviews by the members and experts of the Program Committee. Only those papers that were found to be of the highest quality and novelty were accepted and included in the proceedings. These proceedings contain 93 papers, in particular, 34 for the main track with an acceptance rate of 59%, 54 for special sessions, and 5 for the colocated workshop, were accepted and presented at IDEAL 2020.

We deeply appreciate the efforts of our invited speakers Paulo Lisboa of Liverpool John Moores University, UK; João Gama of the University of Porto, Portugal; and George Baciu of Hong Kong Polytechnic University, China; and thank them for their interesting and inspiring lectures.

We would like to thank our sponsors for their technical support. We would also like to thank everyone who invested so much time and effort in making the conference a success, particularly the Program Committee members and reviewers, the organizers of the special sessions, as well as all the authors who contributed to the conference.

A big thank you to the special sessions and workshop chairs Antonio J. Tallón-Ballesteros and Susana Nascimento for their fantastic work.

Special thanks also go to the MLSM 2020 organizers Sara Ferreira, Henrique Lopes Cardoso, and Rosaldo Rossetti.

Finally, we are also very grateful to the hard work by the local Organizing Committee at the University of Minho, Portugal, especially Pedro Oliveira, António Silva, and Bruno Fernandes for checking all the camera-ready files. The continued support, sponsorship, and collaboration from Springer LNCS are also greatly appreciated.

November 2020

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