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IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

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Mieczysław Lech Owoc ·
Maciej Pondel (Eds.)

Artificial Intelligence for Knowledge Management

7th IFIP WG 12.6 International Workshop, AI4KM 2019
Held at IJCAI 2019
Macao, China, August 11, 2019
Revised Selected Papers

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ISSN 1868-4238

ISSN 1868-422X (electronic)

IFIP Advances in Information and Communication Technology

ISBN 978-3-030-85000-5

ISBN 978-3-030-85001-2 (eBook)

<https://doi.org/10.1007/978-3-030-85001-2>

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

Preface

Welcome to the proceedings of the 7th IFIP WG 12.6 International Workshop on Artificial Intelligence for Knowledge Management (AI4KM 2019), which was held in conjunction with the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019). IJCAI was held during August 10–16, 2019, in Macao, China, with AI4KM taking place on August 11, 2019.

The very rich program of IJCAI-19 covered a huge number of papers presenting different aspects of theoretical background as well as plenty of practical solutions in the artificial intelligence (AI) domain. In the main tracks of the conference topics such as the usability of graphs and networks, the exploration of potential resources in different domains, and learning as the crucial tool in discovering knowledge appeared very often. In addition, specialized co-located events, which were focused on improving human well-being through AI and understanding intelligence and human-level AI in the new machine learning era, proposed more global perspectives of modern intelligent technologies.

Knowledge management is a large multidisciplinary field having its roots in both management and AI. Knowledge is one of the intangible capitals that influence the performance of organizations and their capacity to innovate. Since the beginning of the KM movement in the early 1990s, companies and nonprofit organizations have experimented with various approaches. AI has brought additional knowledge modeling, knowledge processing, and problem-solving techniques. The AI4KM workshop aims to bridge the gap between AI and knowledge management to advance new methods for organizing, accessing, and exploiting multidisciplinary knowledge, bringing together both decision makers and the developers of intelligent technology.

AI4KM was initiated in Montpellier in 2012 as part of the European Conference on Artificial Intelligence (<http://www.eccai.org/ecai.shtml>), and it continued in Warsaw in 2014 as a part of the Conference on Knowledge Acquisition and Management (KAM) under the framework of the Federated Conferences on Computer Science and Information Systems (<https://fedcsis.org/2014/kam>). The third edition of the workshop, which took place in Buenos Aires in 2015, saw the beginning of the partnership with the International Joint Conference on Artificial Intelligence (<https://ijcai-15.org>), with further editions taking place in New York (2016), Melbourne (2017), and Stockholm (2018) – all under the IJCAI framework.

The objective of this multidisciplinary workshop is to gather both researchers and practitioners to discuss methodological, technical, and organizational aspects of AI used for knowledge management and to share the feedback on KM applications using AI. The main theme of AI4KM 2019 was “AI for Humans”, focusing on AI applied to face current challenges such as climate change, eco-innovation, societal innovation, and global security.

This volume contains a selection of updated and extended papers from the workshop. The final versions of the papers cover new contributions in the research area concerning the use of AI methods and techniques for knowledge management.

Our invited speaker Waltraut Ritter addressed a very current topic: AI in transportation. Presentations of solutions, discovered obstacles, and perspectives from different countries allowed us to better understand the importance of AI techniques in the discussed field.

In the first presented paper, “Using a Semantic-based Support System for Merging from Process Participants”, the authors proposed a useful system for managing knowledge about business processes which helps in complex cases.

The quest of applying a new approach addressed to smart cities management was discussed in “The Concept of Crowdsourcing in Knowledge Management in Smart Cities”, where the author developed a model of distribution of knowledge between residents and decision makers.

Smart city management supported by big data technology oriented on crucial agglomeration components was discussed in the second paper on smart cities, “The Impact of Big Data in Smart City Concepts”.

The authors of the paper “Artificial Intelligence Technologies in Education: Benefits, Strategies and Implementation in Non-Public Universities” presented an overview of the state of the art and proposals for the implementation of intelligent technologies in the specific sector of education, including administration as well as teaching.

Similar to the previous paper, in terms of the implementation area, was the presentation on “E-learning as an Extending Tool of Knowledge Management” where the author demonstrated relationships essential to the consideration of knowledge management and e-learning.

The importance of associated AI technologies (in this case IoT) for business was addressed in the paper “Internet of Things as a Significant Factor of Innovations for Intelligent Organizations”, which specified business models determined by the discussed technology.

The problem of presenting retrieved information in a smarter way for broadly defined managerial purposes was discussed in the paper “Semantics Visualization as a User Interface in Business Information Searching”.

In the paper “Machine Learning Solutions in Retail E-commerce to Increase Marketing Efficiency” the authors proposed a method of machine learning-based data analysis leading to tailored offers for customers.

In summary, the papers presented at AI4KM 2019 and included in this proceedings cover a range of novel AI methods in KM development, and we hope that you will enjoy reading and disseminating the papers.

We would like to thank the members of the Program Committee, who reviewed the papers and created the opportunity to manage an interesting workshop in Macao. We would also like to express our gratitude to all the authors and our invited speaker, Waltraut Ritter from Knowledge Dialogues, Hong Kong. Our special thanks go to Eunika Mercier-Laurent (the chair of IFIP TC-12 “Artificial Intelligence”) for her contribution to the organization and kindly coordinating the entire project. Finally, our thanks are addressed to the Local Organizing Committee and all the supporting institutions.

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