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# Knowledge Science, Engineering and Management

15th International Conference, KSEM 2022  
Singapore, August 6–8, 2022  
Proceedings, Part I

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Part I

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# Preface

This three-volume set contains the papers presented at the 15th International Conference on Knowledge Science, Engineering, and Management (KSEM 2022), held during August 6–8, 2022, in Singapore.

There were 498 submissions. Each submission was reviewed by at least 3, and on average 3.5, Program Committee members. The committee decided to accept 150 regular papers (30% acceptance rate) and 19 special track papers, giving a total of 169 papers. We have separated the proceedings into three volumes: LNCS 13368, 13369, and 13370.

KSEM 2022 was the fifteenth in this series of conferences which started in 2006. The aim of this interdisciplinary conference is to provide a forum for researchers in the broad areas of knowledge science, knowledge engineering, and knowledge management to exchange ideas and to report state-of-the-art research results. KSEM is in the list of CCF (China Computer Federation) recommended conferences (C series, Artificial Intelligence).

KSEM 2022 was held in Singapore, following the traditions of the 14 previous successful KSEM events in Guilin, China (KSEM 2006); Melbourne, Australia (KSEM 2007); Vienna, Austria (KSEM 2009); Belfast, UK (KSEM 2010); Irvine, USA (KSEM 2011); Dalian, China (KSEM 2013); Sibiu, Romania (KSEM 2014); Chongqing, China (KSEM 2015), Passau, Germany (KSEM 2016), Melbourne, Australia (KSEM 2017), Changchun, China (KSEM 2018); Athens, Greece (KSEM 2019), Hangzhou, China (KSEM 2020), and Tokyo, Japan (KSEM 2021).

The objective of KSEM 2022 was to bring together researchers and practitioners from academia, industry, and government to advance the theories and technologies in knowledge science, engineering, and management. KSEM 2022 focused on three broad areas: Knowledge Science with Learning and AI (KSLA), Knowledge Engineering Research and Applications (KERA), and Knowledge Management with Optimization and Security (KMOS).

We would like to thank the conference sponsors: Springer, Nanyang Technological University, Singapore, and Princeton University, USA. Moreover, we would like to express our gratitude to the honorary chairs and the KSEM Steering Committee chairs, Ruqian Lu (Chinese Academy of Sciences, China) and Dimitris Karagiannis (University of Vienna, Austria), and the members of the Steering Committee, who provided insight and guidance during all the stages of this effort. The KSEM 2022 general co-chairs, Ruby B. Lee (Princeton University, USA), Tianwei Zhang (Nanyang Technological University, Singapore), and Yaxin Bi (Ulster University, Jordanstown, UK), were

extremely supportive in the conference organizing, call for papers, and paper review processes, and we thank them for the general success of the conference.

August 2022

Gerard Memmi  
Baijian Yang  
Linghe Kong  
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