

## Preface

This volume constitutes the proceedings of the International Conference on Data Mining and Big Data (DMBD 2016), which was held in conjunction with the 7th International Conference on Swarm Intelligence (ICSI 2016), during June 25–30, 2016, at Padma Resort in Legian, Bali, Indonesia.

The theme of DMBD 2016 was “Serving Life with Data Science.” Data mining refers to the activity of going through big data sets to look for relevant or pertinent information. This type of activity is a good example of the axiom “looking for a needle in a haystack.” The idea is that businesses collect massive sets of data that may be homogeneous or automatically collected. Decision-makers need access to smaller, more specific pieces of data from these large sets. They use data mining to uncover the pieces of information that will inform leadership and help chart the course for a business. Big data contains a huge amount of data and information and is worth researching in depth. Big data, also known as massive data or mass data, refers to the amount of data involved that are too great to be interpreted by a human. However, the methods to process big data are ineffective. Currently, the suitable technologies include data mining, A/B testing, crowdsourcing, data fusion and integration, genetic algorithms, machine learning, natural language processing, signal processing, simulation, time series analysis, and visualization. But real or near-real-time information delivery is one of the defining characteristics of big data analytics. It is important to find new methods to enhance the effectiveness of big data. With the advent of big data analysis and intelligent computing techniques we are facing new challenges to make the information transparent and understandable efficiently. DMBD 2016 provided an excellent opportunity and an academic forum for academia and practitioners to present and discuss the latest scientific results, methods, and innovative ideas and advantages in theories, technologies, and applications in data mining, big data, and intelligent computing. The technical program covered all aspects of data mining, big data, and swarm intelligence as well as intelligent computing methods applied to all fields of computer science, signal/information processing, machine learning, data mining and knowledge discovery, robotics, big data, scheduling, game theory, parallel realization, etc.

DMBD 2016 took place at Padma Resort in Legian, Bali, Indonesia. Bali is a famous Indonesian island with the provincial capital at Denpasar. Lying between Java to the west and Lombok to the east, this island is renowned for its volcanic lakes, spectacular rice terraces, stunning tropical beaches, ancient temples, and palaces, as well as dance and elaborate religious festivals. Bali is also the largest tourist destination in the country and is renowned for his highly developed arts, including traditional and modern dance, sculpture, painting, leather, metalworking, and music. Since the late 20th century, the province has had a big rise in tourism. Bali received the Best Island Award from *Travel and Leisure* in 2010. The island of Bali won because of its attractive surroundings (both mountain and coastal areas), diverse tourist attractions,

excellent international and local restaurants, and the friendliness of the local people. According to BBC Travel released in 2011, Bali is one of the world's best islands!

DMBD 2016 received 115 submissions from about 278 authors in 36 countries and regions (Algeria, Australia, Bangladesh, Brazil, Chile, China, Colombia, Egypt, France, Germany, Greece, India, Indonesia, Iraq, Ireland, Japan, Kazakhstan, Republic of Korea, Luxembourg, Malaysia, Norway, Poland, Portugal, Romania, Russian Federation, Singapore, Slovakia, South Africa, Spain, Sweden, Chinese Taiwan, Tunisia, Turkey, UK, USA, Vietnam) across six continents (Asia, Europe, North America, South America, Africa, and Oceania). Each submission was reviewed by at least two reviewers, and on average 2.8 reviewers. Based on rigorous reviews by the Program Committee members and reviewers, 57 high-quality papers were selected for publication in this proceedings volume with an acceptance rate of 49.57 %. The papers are organized in 10 cohesive sections covering all major topics of the research and development of data mining and big data and one Workshop on Computational Aspects of Pattern Recognition and Computer Vision.

As organizers of DMBD 2016, we would like to express sincere thanks to Peking University and Xian Jiaotong-Liverpool University for their sponsorship, and to Beijing Xinghui Hi-Tech Co. for its co-sponsorship as well as to the IEEE Computational Intelligence Society, World Federation on Soft Computing, and International Neural Network Society, IEEE Beijing section for their technical co-sponsorship. We would also like to thank the members of the Advisory Committee for their guidance, the members of the international Program Committee and additional reviewers for reviewing the papers, and the members of the Publications Committee for checking the accepted papers in a short period of time. We are especially grateful to the proceedings publisher Springer for publishing the proceedings in the prestigious series of *Lecture Notes in Computer Science*. Moreover, we wish to express our heartfelt appreciation to the plenary speakers, session chairs, and student helpers. In addition, there are still many more colleagues, associates, friends, and supporters who helped us in immeasurable ways; we express our sincere gratitude to them all. Last but not the least, we would like to thank all the speakers, authors, and participants for their great contributions that made DMBD 2016 successful and all the hard work worthwhile.

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