



## Special Issue of DASFAA 2019

Guoliang Li<sup>1</sup> · Joao Gama<sup>2</sup> · Jun Yang<sup>3</sup>

Published online: 21 September 2019  
© The Author(s) 2019

We are pleased to present a special issue of Data Science and Engineering (DSE), which contains a collection of six extended papers from DASFAA 2019 conference. Besides these six special issue papers, this DSE issue also has one regular research paper.

The International Conference on Database Systems for Advanced Applications (DASFAA) is a leading international forum for discussing the latest research on database systems and advanced applications. The conference's long history has established itself as the premier research conference in the database area. The 24th International Conference on Database Systems for Advanced Applications (DASFAA 2019) was held on April 22–25, 2019, in Chiang Mai, Thailand. DASFAA 2019 received 501 research paper submissions, each of which was assigned to at least three Program Committee (PC) members and one senior PC (SPC) member. The thoughtful discussion on each paper by the PC with facilitation and meta-review provided by the SPC resulted in the selection of 92 full research papers (acceptance ration of 18%) and 72 short papers (acceptance ration of 32%).<sup>1</sup> In addition, DASFAA 2019 included 13 demo papers and 6 tutorials in the program. The dominant topics for the selected papers included big data, machine learning, graph and social network, recommendation, data integration and crowd sourcing, and spatial data management. The conference program also included three keynote presentations by Prof. Anthony K. H. Tung (National University of Singapore), Prof. Lei Chen (The Hong Kong University

of Science and Technology), and Prof. Ashraf Aboulnaga (Qatar Computing Research Institute, QCRI).

The six extended papers for this special issue were selected from among all the accepted papers by the special issue guest editors Guoliang Li, Joao Gama, and Jun Yang, based on the relevance to the journal and the reviews of the conference version of the papers. The authors were asked to revise the conference paper for journal publication and in accordance with customary practice of adding 30% new materials. The revised papers again went through the review process in accordance with DSE guidelines and are finally presented to the readers in the present form.

The six extended papers in this special issue cover a variety of topics related to data science and engineering. The first paper “Towards Automatic Mathematical Exercises Solving” designed MathGraph, a knowledge graph aiming to solve high school mathematical exercises. The second paper “Modular Decomposition-Based Graph Compression for Fast Reachability Detection” proposed a multilevel compression scheme for DAGs, which was built on existing compression schemes, but could further reduce the graph size for many real-world graphs. The third paper “Mapping Entity Sets in News Archives across Time” proposed a new way of utilizing and accessing information stored in news archives as well as a new style of investigating the history. The fourth paper “Latency Aware Secure Elastic Stream Processing with Homomorphic Encryption” presented the design and implementation of an Elastic Switching Mechanism for data stream processing which is based on Homomorphic Encryption. The fifth paper “MMM: Multi-source Multi-net Micro-video Recommendation with Clustered Hidden Item Representation Learning” proposed a multi-source multi-net micro-video recommendation model that recommends micro-videos fitting users' best interests. The last paper “Selectivity Estimation on Set Containment Search” studied the problem of selectivity estimation on set containment search, extended existing distinct value estimating

---

✉ Guoliang Li  
liguoliang@tsinghua.edu.cn

Joao Gama  
jgama@fep.up.pt

Jun Yang  
junyang@cs.duke.edu

<sup>1</sup> Department of Computer Science and Technology, Tsinghua University, Beijing, China

<sup>2</sup> University of Porto, Porto, Portugal

<sup>3</sup> Duke University, Durham, USA

<sup>1</sup> <https://link.springer.com/book/10.1007/978-3-030-18576-3>  
<https://link.springer.com/book/10.1007/978-3-030-18579-4>.

techniques to solve this problem, and developed an inverted list and sketch-based approach.

We hope that the readers enjoy this special issue. We would like to acknowledge the work done by all the authors and their willingness to contribute their papers to this special issue. We thank all the reviewers for their expert comments and assistance in timely reviews. Finally, a note of thanks is to DSE Editors-in-Chief X. Sean Wang and Elisa Bertino for their guidance and support in this process.

August 25, 2019

Guoliang Li

Joao Gama

Jun Yang

**Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.