Editorial of Special Issue of ICDM 2019

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We are pleased to present a special issue of Data Science and Engineering (DSE), which contains a collection of eight extended papers from the ICDM 2019 conference.

Since its inception in 2001, the IEEE International Conference on Data Mining (ICDM) has become a premier forum to exchange and disseminate original research results and new research directions in data mining. The 19th IEEE ICDM was held in Beijing, China, from 8 to 11 November 2019 and attracted a record-breaking number of 1046 paper submissions from 52 different countries/regions. Ninety-five regular papers (9.1% acceptance rate) and 99 short papers were selected for inclusion in the proceedings and program (giving a total acceptance rate of 18.5%). Paper topics span numerous active and emerging areas including: data mining, deep learning, Web search, and KDD process. The conference program also included three outstanding keynotes given by internationally renowned, distinguished scientists Ronald Fagin (IBM Almaden Research Center), Joseph Halpern (Cornell University) and Jiawei Han (University of Illinois at Urbana-Champaign).

The eight extended papers for this special issue were selected from among all the accepted short papers by the special issue guest editors Wei Shen, Wei Zhang, Jianhua Yin, and Jianyong Wang, based on the relevance to the journal and the reviews of the conference version of the papers. The authors were asked to enhance 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 eight extended papers in this special issue cover a variety of topics related to data science and engineering. In the first paper, “Achieving Fairness with Decision Trees: an Adversarial Approach,” authors focus on the topic of fair classification and propose a novel approach of adversarial gradient tree boosting. The second paper “Semi-supervised Adversarial Domain Adaptation for Seagrass Detection using Multispectral Images in Coastal Areas” develops a semi-supervised domain adaptation method to generalize a trained deep CNN model to other locations for seagrass detection. The third paper “Deep-Aligned Convolutional Neural Network for Skeleton-based Action Recognition and Segmentation” proposes a novel deep-aligned convolutional neural network to tackle the challenges for the particular problem of skeleton-based action recognition and segmentation. In the fourth paper, “Transfer Metric Learning for Unseen Domains,” authors propose a transfer metric learning method to infer domain-specific data embeddings for unseen domains by using knowledge transferred from related domains. The fifth paper “What is the value of experimentation and measurement?” tackles the problem of experimentation and measurement by analyzing how, by decreasing estimation uncertainty, the experimentation and measurement platforms allow for better prioritization. In the sixth paper, “Space-efficient Feature Maps for String Alignment Kernels,” authors present the first approximation for string alignment kernels, by leveraging a metric embedding named edit sensitive parsing and feature maps of random Fourier features for large scale string analyses. The seventh paper “Contextual Sentiment Neural Network for Document Sentiment Analysis” proposes a novel neural network model that can explain the process of its sentiment analysis prediction in a way that humans find natural and agreeable and can catch-up the summary of the contents. The eighth paper “Meta-supervision for Attention using Counterfactual Estimation”

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studies the problem of attention supervision and proposes a counterfactual method to estimate missing observations.

We hope that the readers enjoy this special issue. We would like to acknowledge the work done by all authors and their willingness to contribute their papers for 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 Editor-in-Chief X. Sean Wang and Managing Editor Bin Cui for their guidance and support in this process.

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