Introduction to the Special Issue on Learning-based Support for Data Science Applications

This issue of ACM/IMS Transactions on Data Science (TDS) contains a collection of 6 articles from 25 submissions to the TDS journal.

TDS is a Gold Open Access journal that publishes articles on cross-disciplinary innovative research ideas, algorithms, systems, theory, and applications for data science. Articles that address challenges at every stage, from acquisition on, through data cleaning, transformation, representation, integration, indexing, modeling, analysis, visualization, and interpretation, while retaining privacy, fairness, provenance, transparency, and provision of social benefit, within the context of big data, fall within the scope of the journal.

The six accepted articles for this issue are representative in their respective fields, including communication, image processing, natural language processing, dark data, text recognition, and data deduplication. According to the traits of their own fields, these articles apply appropriate machine learning technologies and have achieved convincing results. We believe that these achievements can provide machine learning-based solutions for applications in real life and inspire more practical problems to be solved via machine learning techniques. In “[Deep Hash-based Relevance-aware Data Quality Assessment for Image Dark Data](#),” authors propose a deep hash-based framework called DHR-DQA to lighten and assess image dark data. This framework combines deep learning, hashing technique, graph technique, and CV technique to explore a very advanced application, which is very enlightening. In “[Boosting the Restoring Performance of Deduplication Data by Classifying Backup Metadata](#),” authors utilize machine learning techniques to complete a classic task in the storage field, and the results show the universality of machine learning techniques.

From these articles, we observe that machine learning can solve almost all the application problems under rational condition. We hope readers enjoy this special issue and that these articles can enlighten their work.

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ACM Reference format:

Ke Zhou and Jingkuan Song. 2021. Introduction to the Special Issue on Learning-based Support for Data Science Applications. *ACM/IMS Trans. Data Sci.* 2, 2, Article 9 (March 2021), 1 page. <https://doi.org/10.1145/3450751>

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2577-3224/2021/03-ART9

<https://doi.org/10.1145/3450751>