

## Editorial

This third issue of the evelenth volume of JIDM brings a section with six extended versions of best papers from the 34rd Brazilian Symposium on Databases (SBB D 2019 Section). This edition includes all awarded articles in the Full Paper category (Best Paper Award (José Mauro de Castilho Award), Best Student Paper Award, and the two honorable mentions) and some awarded in the Short Paper category.

Section *SBB D 2019* includes extended and revised versions of papers selected from the 34rd Brazilian Symposium on Databases. The six articles of the section are extended versions of the best papers presented at the symposium. SBB D is the official event on databases of the Brazilian Computer Society (SBC). It is the largest venue in Latin America for presentation and discussion of research results and applications in the database domain. In this edition, papers submitted in the categories Full, Short, Vision, and Industrial were judged through double-blind reviewing, where the identities of the authors are concealed from the reviewers and the identities of the reviewers are hidden from the authors.

This issue starts with the article that won the JMC Award 2019 (José Mauro Castilho award), entitled “Mining Temporal Exception Rules from Multivariate Time Series Using a new Support Measure”, by Thábata Amaral and Elaine P. M. de Sousa. It presents TRiER (TempoRAL Exception Ruler), a method for mining temporal exception rules that discover unusual behaviors and their causative agents and identify how long consequences take to appear. The authors also present a new support measure to manipulate time series. This metric considers the context in which a pattern occurs, thus incorporating more semantics to the results. They performed an extensive experimental analysis in real multivariate time series to verify the practical applicability of TRiER. The results show TRiER has lower computational cost and is more scalable than existing approaches while finding a succinct and relevant set of patterns.

Then we present the Best Student Paper Award winner, the article “Overcoming Bias in Community Detection Evaluation”, by Jeancarlo C. Leão, Alberto H. F. Laender and Pedro O. S. Vaz de Melo. The article describes an approach that supports a robust quality evaluation when detecting communities in real-world networks. The authors measure the quality of a community by applying the structural and functional strategies and combining both to obtain different pieces of evidence. They consider the divergences and the consensus among the pieces of evidence to identify and overcome possible sources of bias in community detection algorithms, evaluation metrics, and network data. Experiments conducted with several real and synthetic networks showed the effectiveness of that approach to obtain more consistent conclusions about the detected communities’ quality.

The next two article had received the honored mention in the Full Paper Category. We first present the article entitled “Polyflow: a Polystore-compliant Mechanism to Provide Interoperability to Heterogeneous Provenance Graphs”, by Yan Mendes, Daniel de Oliveira, Victor Ströele. It presents a Systematic Literature Mapping, assessing existing solutions under several different lenses. With an understanding of state of the art, the authors propose a tool called Polyflow, which is based on the concept of Polystore systems, integrating several databases of heterogeneous origin by adopting a global ProvONE schema. Polyflow allows scientists to query multiple provenance graphs in an integrated way. Polyflow was evaluated by experts using provenance data collected from real experiments that generate phylogenetic trees through workflows. The experiment results suggest that Polyflow is a viable solution for interoperating heterogeneous provenance data generated by different WfMSs, both from usability and performance. Next, we introduce the article intituled “SAVIME: An Array DBMS for Simulation Analysis and ML Models Predictions”, by Hermano. L. S. Lustosa, Anderson C. Silva, Daniel N. R. da Silva, Patrick Valduriez and Fabio Porto. The article describes an in-memory array DBMS system called SAVIME, along with its data model. The focus is to make scientific applications benefit from DBMS support, enabling declarative data analysis and visualization over scientific data.

The preliminary evaluation shows how SAVIME, by using a simple storage definition language (SDL), can outperform the state-of-the-art array database system, SciDB, during the process of data ingestion. The authors also show that it is possible to use SAVIME as a storage alternative for a numerical solver without affecting its scalability, making it useful for modern ML based applications.

Finally, we present the awarded articles in the Short Paper category. First, we introduce the article “Efficient Processing of Analytical Queries Extended with Similarity Search Predicates over Images in Spark” by Guilherme Muzzi da Rocha and Cristina Dutra de Aguiar Ciferri. This article describes two methods to efficiently solve the challenge of applications that manage huge volumes of data, where the use of parallel and distributed data processing frameworks is needed in Spark. BrOmnImg is based on the integration of the broadcast join and the Omni techniques to process the star join operation and the distance calculations, respectively. BrOmnImgCF extends BrOmnImg by using conventional predicate to reduce the number of distance calculations further. Compared with the closest method available in the literature, BrOmnImg reduced the time spent on query processing by up to about 65%. Compared with BrOmnImg, BrOmnImgCF improved the performance by up to about 54%. Lastly, the article “An Experimental Analysis of the Use of Different Storage Technologies on a Relational DBMS” by Francisco D. B. S. Praciano, Italo C. Abreu and Javam C. Machado, brings an analysis of the performance of a DBMS using three storage technologies as data locations: HDD, SSD NVM, and DRAM, and a hybrid way combining all three. To do this, the authors use two workloads, analytical and transactional, and observe throughput and latency. After, they discuss the reasons for the results obtained for each type of storage. They also show that the query processing can benefit from the different characteristics of each storage technology to perform faster queries and, finally, they analyze the benefits of using a hybrid storage system.

On behalf of the JIDM Editorial board, we hope that you enjoy reading this Special Issue of the JIDM. We would like to thank everyone who contributed to this Special Edition, particularly reviewers for their valuable comments and authors for their contributions and hard work in preparing their final manuscripts.

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