

Editor's Notes

Welcome to the December 2020 issue of the ACM SIGMOD Record!

This issue features three articles in the Vision column. The first article, by Traub, Kaoudi, Quiané-Ruiz, and Markl, presents Agora, which is a vision toward a unified data-oriented asset ecosystem. The authors envision that in Agora, data, algorithms, and other fine-grained data-related units of production would all be first-class citizens that can be offered, discovered, and combined to form novel data-driven applications. Assets in Agora could be shared through marketplaces, combined and used through asset managers, and executed through execution managers. The article presents a carefully thought through and detailed list of open research challenges that need to be addressed to make the Agora vision a reality. The article is a call for action to the database community, which is well positioned to lead the efforts toward the vision of a unified data-oriented asset ecosystem.

The second article in the Vision column, by Liu, Barthels, Blanas, Kimura, and Swart, presents a new initiative in the context of state-of-the-art RDMA communication primitives. In this setting, the authors focus on the challenge created by data-intensive systems requiring higher-level communication abstractions that support more complex interaction patterns over networks than RDMA. The article details the shortcomings of the natural higher-level option of MPI, and then introduces the Remote Direct Memory Operation (RDMO) interface that permits key operations on remote memory to be executed in one roundtrip. The argument in support of the idea of RDMO includes order-of-magnitude speedup results shown by the authors in performing common database operations as RDMOs vs the alternatives.

The third article in the Vision column, by Karumuri, Solleza, Zdonik, and Tatbul, points to current experiences and challenges in the industry around understanding and resolving complex software problems. As exemplified by the use case of Slack, solutions capable of addressing these challenges would need to be able to handle large amounts of information to be analyzed. The authors bring up the notion of observability from control theory, as a requirement of improved visibility and understanding of complex software behaviors based on the information collected at runtime. The article proposes to consider observability as a data-management problem, and calls for database research in this emerging area. Specifically, the authors present a new cloud-native polystore architecture that decouples real-time and historical data-access tiers from the underlying persistent-storage and querying tier. The proposed architecture is designed in ways that enable scaling the tiers independently. The authors are working on the initial prototype of the architecture, with plans to test it with production data from Slack.

The Reports column in this issue features two articles. The first article, by Artikis, Eiter, Margara, and Vansummeren, reports on the seminar on the Foundations of Composite Event Recognition that was held in February 2020 at Schloss Dagstuhl, Leibniz Center for Informatics. The focus of the seminar was on composite event recognition (CER); the term refers to the process of matching patterns in streams of continuously arriving event data over geographically distributed sources. As CER is a key ingredient in many modern Big-Data applications, this research area has lately been attracting high interest from diverse communities. The existing projects have focused more on practical systems and less on formal foundations of CER; as a result, CER can be difficult to understand, extend, and generalize. The Dagstuhl seminar gathered 39 researchers and practitioners working on CER, in an effort to start addressing these challenges. The seminar featured six tutorials and hosted working groups devoted to five topics, including uncertainty in CER, benchmarking, and parallelization. The seminar identified future research challenges on the foundations of CER; more

events focused on CER are on the agenda. More information on the seminar is available in the Dagstuhl report.

The second article in the column is a special extended report on the experiences and lessons learned by EDBT and ICDT organizers from holding the conferences fully online and live in early 2020. These two conferences, held jointly, were among the first that moved to a fully synchronous online experience due to the COVID-19 situation. The authors describe the resulting experiment that came with potentially important lessons for the community and beyond. The important highlight is that overall, the online event ran smoothly and was significantly more enjoyable and successful than expected. The article shares the experiences and lessons learned for the benefit of organizers of other conferences facing similar situations. It includes a list of questions that other organizers are likely to case, outlines decisions and implementation descriptions, and shares the authors' thoughts in retrospect on the conference outcomes.

On behalf of the SIGMOD Record Editorial board, I hope that you enjoy reading the December 2020 issue of the SIGMOD Record!

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