

Editor's Notes

Welcome to the September 2021 issue of the ACM SIGMOD Record!

This issue starts with the Database Principles column featuring an article by Geerts, Muñoz, Riveros, Van den Bussche, and Vrgoč. The authors consider the problem of devising a natural core of linear-algebra matrix operations, where such operations would be first-class citizens alongside relational operations. The importance of addressing this problem is in the potential for improved query performance in SQL processors in data-science applications; in addition, matrix query languages can be used as graph query languages. The particular family of languages discussed in the paper is based on the matrix query language MATLANG; it spans operations related to eigenvalues and eigenvectors, matrix decompositions, iterations, and transitive closure. The article is written in an engaging conversational style that harkens back to that of Yuri Gurevich's column on Logic in Computer Science in the EATCS Bulletin. The authors provide numerous illustrations, provide pointers to work in related areas, and outline open problems for future research.

The Advice to Mid-Career Researchers column features an article by H.V. Jagadish. The article provides advice on transitioning from a junior to senior researcher in the database field from the perspective of researchers roughly five to ten years post their Ph.D. (Similarly to other articles in this series, this article will also be of interest to mentors of mid-career researchers, to junior faculty, as well as to graduate students and to those undergraduate students who are thinking about research-oriented careers.) The author shares his thoughts on the importance of metrics and on the perennial problem of quantity vs quality in research. He observes that as institutions become stronger, they should shift from number-based expectations to more holistic assessments of research impact. The article then discusses ways of maximizing research impact, touching on the issues of choosing (the number of) topics and of involving the user perspective in topic definition. Finally, the author provides his perspective on persistence in building the body of research work and examines approaches to professional service.

It is a pleasure to introduce a new SIGMOD Record column, The Future of Data(base) Education. The column opens with an introduction by the column editor Susan B. Davidson. The first article featured in the column, by Ives, Gehrke, Giceva, Kumar, and Pottinger, summarizes a VLDB-2021 panel by the authors on the topic of the column. The article focuses on three problems: The role of the database field in computing, the topics that should be taught in a modern database course, and the placement of database education with respect to data science. The article includes perspectives of the authors and of the panel audience on these questions, and closes with thoughts on how the community could move forward in data(base) education.

The DBrainstorming column, whose goal is to discuss new and potentially controversial ideas that might be of interest and potentially of benefit to the research community, features in this issue an article by Trummer. The author brings up new opportunities in database research that have arisen from recent advances in the state of the art in natural-language processing (NLP). The proposal considered in the article is to leverage NLP to improve the efficiency of data processing. The article looks at potential use cases in this scenario and provides a roadmap for research advances in making database-tuning tools more robust and in enabling query rewrites that are not considered by traditional query optimizers.

The Distinguished Profiles column features an interview with Joy Arulraj, assistant professor at Georgia Tech with a PhD from the Carnegie Mellon University. Joy won the 2019 ACM SIGMOD Jim Gray

Dissertation Award for his thesis entitled The Design and Implementation of Non-Volatile Memory Database Management Systems. In this interview, Joy talks about the focus of his thesis and about his new logging protocol for non-volatile memory (NVM). While research on memory-oriented database systems goes back to the 1990s, opportunities for making a difference in practice have only started coming up in the past five years, as the price-performance tradeoff has permitted NVM to become commercially viable. Joy discusses how his thesis touches on the pain points in this space and how it has had industry impact. He also shares ideas of interest to graduate students and provides advice on their journeys through graduate school.

The Reports column features an article by Kondylakis, Stefanidis, and Rao. The authors report on the outcomes of the Third International Workshop on Semantic Web Meets Health Data Management (SWH-2020), which brought together last year an interdisciplinary audience interested in the Semantic Web, data management, and health informatics. The goal of the workshop was to discuss challenges in healthcare data management and to propose new solutions for the next generation of data-driven healthcare systems. The article summarizes the outcomes of the workshop and presents a number of key observations and research directions that emerged from the workshop presentations.

On behalf of the SIGMOD Record Editorial board, I hope that you enjoy reading the September 2021 issue of the SIGMOD Record!

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Rada Chirkova

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