Guest Editors’ Notes

Welcome to the March 2024 issue of the ACM SIGMOD Record, a special issue presenting papers and technical perspectives covering a selection of the best conference papers from 2023 in data management. These papers have been given the **2023 ACM SIGMOD Research Highlight Award**. This is an award for the database community to showcase a set of research projects that exemplify core database research. In particular, these projects address an important problem, the papers represent a definitive milestone in solving the problem, and have the potential of significant impact. This award also aims to make the selected works widely known in the database community, to our industry partners, and to the broader ACM community.

The award committee and editorial board included Angela Bonifati, Rada Chirkova, Alfons Kemper, Samuel Madden, Kenneth Ross (chair) and Yufei Tao. We solicited articles from PODS 2023, SIGMOD 2023, VLDB 2023, ICDE 2023, EDBT 2023, and ICDT 2023, as well as from community nominations. We used a careful review process, in which each nominated paper was discussed in a virtual meeting. Papers with conflict of interest were discussed in the absence of the conflicting committee members. This year, ten articles were finally selected as 2023 Research Highlight Award winners. One of the articles was previously highlighted in the December 2023 issue of ACM SIGMOD Record, and so it does not appear here in the March 2024 issue.

The authors of each article worked closely with an associate editor to rewrite the article into a compact 8-page format and improved it to appeal to the broad data management community. In addition, each research highlight in the March 2024 issue is accompanied by a one-page technical perspective written by an expert on the topic presented in the article. The technical perspective provides the reader with an overview of the background, the motivation, and the key innovation of the featured research highlight, as well as its scientific and practical significance.

The 2023 research highlight award winners include:

1) a method to compute histograms and heavy hitters over data streams in a differentially private setting while adding less noise than previous methods (“Better Differentially Private Approximate Histograms and Heavy Hitters using the Misra-Gries Sketch”);
2) an algorithm to compute “robust” allocations of isolation levels to transactions that guarantees the safety of interleaved executions (“Allocating Isolation Levels to Transactions in a Multiversion Setting”);
3) an analysis of methods for choosing between different conjunctive queries that fit a set of data examples (“Fitting Algorithms for Conjunctive Queries”); [See the December 2023 issue of SIGMOD Record]
4) a way to formulate worst-case optimal joins and conventional binary joins as special cases of a general join operator (“From Binary Join to Free Join”);
5) a framework that manages samples for approximate query processing so that samples can be reused across queries even in the face of changing workloads (“Efficient and Reusable Lazy Sampling”);
6) a novel machine learning model supporting data matching tasks for data integration ("Unicorn: A Unified Multi-tasking Matching Model");
7) a graph theoretic approach to modeling complex data flows in which privacy constraints require that certain nodes must be disconnected ("Graph Theory for Consent Management: A New Approach for Complex Data Flows");
8) a novel way to evaluate differential privacy mechanisms by taking real-world empirical data studies and asking whether the conclusions of those studies would have been visible using synthetic differentially-private data ("Epistemic Parity: Reproducibility as an Evaluation Metric for Differential Privacy");
9) a system that interactively and automatically transforms tables from spreadsheets and web pages into standard relational tables that can be processed by SQL ("Auto-Tables: Relationalize Tables without Using Examples");
10) a unified way of modeling incremental computation on data streams that enables incremental view maintenance ("DBSP: Incremental Computation on Streams and its Applications to Databases");

On behalf of the SIGMOD Record Editorial Board, we hope that you enjoy reading the March 2024 issue of the SIGMOD Record!

Angela Bonifati    Rada Chirkova    Alfons Kemper
Samuel Madden     Kenneth Ross     Yufei Tao

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