

EDBT/ICDT-WS 2023

The Workshops of the EDBT/ICDT 2023 Joint Conference

March 28, 2023

Message from the Workshop Chairs:

It is our great pleasure to present on behalf of the entire conference organizing committee and the workshop organizers, the proceedings of the Workshops co-located with the 26th International Conference on Extending Database Technology (EDBT) and the 26th International Conference on Database Theory (ICDT), held on March 28, 2023 in Ioannina, Greece.

The EDBT and ICDT series of conferences are prestigious forums for exchanging novel results that extend the foundations and applications of data management technologies. This year, nine exciting workshops continue the tradition of focusing on emerging topics in data management, complementing the areas covered by the main technical program (these proceedings include the first eight workshops, while the last one runs its own proceedings):

- [EDBT PhD Workshop](#)
- [Conceptual Modeling for NoSQL Data Stores \(CoMoNoS\)](#)
- [Data Analytics for Personal and Ubiquitous Computing \(DATUM\)](#)
- [Big Mobility Data Analytics \(BMDA\)](#)
- [Health Data Management in the Era of AI \(HeDAI\)](#)
- [Big Data Visual Exploration and Analytics \(BigVis\)](#)
- [Data Analytics Solutions for Real-Life Applications \(DARLI-AP\)](#)
- [Data Platform Design, Management, and Optimization \(DATAPLAT\)](#)
- [Design, Optimization, Languages and Analytical Processing of Big Data \(DOLAP\)](#)

We thank the workshop organizers, PC members and external reviewers for their effort in organizing these workshops, and the authors for continuing to submit their high-quality work to the EDBT/ICDT workshops, making these venues successful and intellectually stimulating.

Sincerely,

George Fletcher, Eindhoven University of Technology (The Netherlands)

Verena Kantere, National Technical University of Athens (Greece)

EDBT PhD Workshop

We, the chairs, are happy to present the proceedings of the 2023 EDBT Ph.D. Workshop. The workshop was co-located with the 26th International Conference on Extending Database Technology (EDBT 2023) in Ioannina, Greece and was held in-person on March 28, 2023. We assembled a program, consisting of 7 papers accepted out of the 11 submissions we received. The papers span a wide spectrum of topics relevant in database research.

The workshop program included a keynote by Boris Glavic (IIT Chicago). Boris Glavic discussed the fundamentals of CS research and then gave guidance to the young researchers on how to structure and focus their tasks. As an additional support for the Ph.D. students, we offered two forms of mentorship. Each student was mapped to a PC member for individual feedback sessions based on the submitted paper and review. We also connected the attendees with well-established members of the database community for general questions about research.

We thank Katja Hose and Sourav S Bhowmick, the EDBT 2023 PC chairs, and Evaggelia Pitoura and Nikos Mamoulis, the general chairs, who entrusted us with this role. We would also like to acknowledge the support of the whole local and technical organizing team. Finally, we thank the workshop program committee, who did a great job evaluating the papers and writing constructive feedback for the authors. We hope the event gave Ph.D. students a good opportunity to share and exchange research ideas with experienced researchers and become members of the friendly and welcoming database community. We wish all participants the very best for their research!

The EDBT 2023 Ph.D. Workshop Chairs

Anton Dignös, Free University of Bozen-Bolzano

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Program Committee

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Conceptual Modeling for NoSQL Data Stores (CoMoNoS)

The objective of the half-day workshop CoMoNoS is to explore opportunities for conceptual modeling, addressing real-world problems that arise with NoSQL data stores (like MongoDB, Couchbase, Cassandra, or Neo4j). In designing an application backed by a NoSQL data store, developers face specific challenges that match the strengths of the database community.

The purpose of this workshop is to grow a community of researchers and industry practitioners working on conceptual modeling for NoSQL data stores. With this workshop, we hope to provide the necessary breeding ground: We are convinced that practitioners will ultimately benefit from the experience of the database research community. At the same time, we want to provide a forum for researchers to learn about the actual pain points faced by practitioners.

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Data Analytics for Personal and Ubiquitous Computing (DATUM)

DATUM '23 aims to bring together researchers, practitioners, and stakeholders within academia and industry who are at the edge of social innovation, personal informatics, and ubiquitous computing, with the goals of fostering dissemination, increasing interdisciplinary knowledge sharing, and strengthening and advancing research on data analytics and related applications on personal and ubiquitous computing.

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Big Mobility Data Analytics (BMDA)

From spatial to spatio-temporal and, then, to mobility data. So, what's next? It is the rise of mobility-aware integrated Big Data analytics. The Big Mobility Data Analytics (BMDA) workshop [series](#), started in 2018 with EDBT Conference, aims at bringing together experts in the field from academia, industry and research labs to discuss the lessons they have learned over the years, to demonstrate what they have achieved so far, and to plan for the future of mobility.

In its 5th edition, the BMDA workshop will foster the exchange of new ideas on multidisciplinary real-world problems, discuss proposals about innovative solutions, and identify emerging opportunities for further research in the area of big mobility data analytics, such as deep learning on mobility data, edge computing, visual analytics. The workshop intends to bridge the gap between researchers and big mobility data stakeholders, including experts from critical domains, such as urban / maritime / aviation transportation, human complex networks.

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Health Data Management in the Era of AI (HeDAI)

Better information management is the key to a more intelligent health and social system. To this direction, many challenges must be first overcome, enabling seamless, effective and efficient access to the various health data sets and novel methods for exploiting the available information. HeDAI aims to bring together an interdisciplinary audience interested in the fields of health informatics, data management, AI, semantic web, and to discuss the unique challenges in health-care data management and to propose novel and practical solutions for the next generation data-driven health-care systems.

As AI technologies are currently widely exploited more and more for the management of health data, new challenges occur daily that dictate new solutions. The continuation of this workshop will allow the specific interdisciplinary audience to have a unique forum for discussing, exchanging ideas and experiences. In addition, directions like for example the incorporation of AI technologies for healthcare decision support, and semantically enhanced AI approaches should be further explored. HeDAI will offer a fruitful environment for these ideas to mature leading to the ultimate goal of improving the results from the healthcare practice.

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Big Data Visual Exploration and Analytics (BigVis)

Information Visualization is nowadays one of the cornerstones of Data Science, turning the abundance of Big Data being produced through modern systems into actionable knowledge. Indeed, the Big Data era has realized the availability of voluminous datasets that are dynamic, noisy and heterogeneous in nature. Transforming a data-curious user into someone who can access and analyze that data is even more burdensome now for a great number of users with little or no support and expertise on the data processing part. Thus, the area of data visualization, visual exploration and analysis has gained great attention recently, calling for joint action from different research areas from the HCI, Computer graphics and Data management and mining communities.

In this respect, several traditional problems from these communities such as efficient data storage, querying & indexing for enabling visual analytics, new ways for visual presentation of massive data, efficient interaction and personalization techniques that can fit to different user needs are revisited. The modern exploration and visualization systems should nowadays offer scalable techniques to efficiently handle billion objects datasets, limiting the visual response in a few milliseconds along with mechanisms for information abstraction, sampling and summarization for addressing problems related to visual information overplotting. Further, they must encourage user comprehension offering customization capabilities to different user-defined exploration scenarios and preferences according to the analysis needs. Overall, the challenge is to offer self-service visual analytics, i.e., enable data scientists and business analysts to visually gain value and insights out of the data as rapidly as possible, minimizing the role of IT-expert in the loop.

The Big Data Visual Exploration and Analytics workshop (BigVis) aims at addressing the above challenges and issues by providing a forum for researchers and practitioners to discuss, exchange, and disseminate their work. BigVis attempts to attract attention from the research areas of: Data Management & Mining, Information Visualization, Human-Computer Interaction, Machine Learning, and Computer Graphics, and highlight novel works that bridge together these communities.

The BigVis 2023 will be held in conjunction with the [26th Intl. Conference on Extending Database Technology \(EDBT 2023\)](#) & [26th Intl. Conference on Database Theory \(ICDT 2023\)](#), Ioannina, GR.

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Data Analytics Solutions for Real-Life Applications (DARLI-AP)

Today, we are witnessing two interrelated trends: (1) significant technological advances in a wide range of technical and ubiquitous devices that can collect ever-increasing amounts of data and (2) unprecedented successes in data science, machine learning, and deep learning. The latter disciplines are considered indispensable general-purpose methods that could play an essential role in various fields and significantly impact society. The practical and efficient use of data science and machine learning algorithms could lead to new and/or unconventional, efficient, and effective methods for solving novel problems arising from the large amount of data generated in the real world. The great potential of such algorithms in real-world applications has not yet been fully explored. Both researchers and practitioners are exploring how data science algorithms can add intelligence to real-world applications, derive new research visions, and develop innovative, more efficient, and more intelligent services.

The workshop aims to allow academics and practitioners from different research areas to share their experiences developing innovative analytics solutions for real-world applications by leveraging innovative data science, machine learning, and deep learning methods.

The DARLI-AP community is growing, and more researchers, professors, and practitioners have contributed to the seventh edition. The program includes 10 research papers co-authored by 41 people (roughly 50% female and 50% man) describing innovative methods and algorithms that address all facets of a data analytics process in novel and interesting real-world applications and by design and developing new, unconventional, helpful, and effective data-driven services.

DARLI-AP 2023 was accompanied by a keynote speaker, Prof. Vana Kalogeraki, Professor and Chair of the Department of Computer Science and Director of the Computer Systems and Communications Laboratory at the Athens College of Economics and Business. Prof. Vana Kalogeraki presented her recent research activity entitled "Real-Time Intelligent Systems for Urban Real-Life Applications", discussing the latest advances and exciting opportunities in two key areas: in monitoring and analyzing massive, heterogeneous, noisy and often unlabeled data streams in real-time and in using the combination of IoT, edge computing and the cloud to meet the ever-increasing demands arising from complex data processing requirements.

The DARLI-AP organizers support diversity and inclusion (D&I) in their community and therefore have asked authors to use inclusive language in their papers and presentations.

They also encouraged women and underrepresented communities to submit papers on the research findings of their activity. Women master's students could register for the event online at no cost to present their early career activities.

The organizers of DARLI-AP would like to thank all those who contributed to the success of the seventh edition:

- The authors - for submitting their research papers to the workshop;
- The keynote speaker, Prof. Vana Kalogeraki, who gave us the honor to present her recent research project and vision at DARLI-AP 2023;
- The members of the Program Committee and the external reviewers who dedicated their time and expertise to provide constructive and very useful feedback to the authors;
- The EDBT/ICDT 2023 chairs - for their trust and valuable support.

DARLI-A co-chairs

- Tania Cerquitelli, Politecnico di Torino, Italy
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Data Platform Design, Management, and Optimization (DATAPLAT)

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Main goal of the workshop and list of the workshop topics

Information systems have evolved into complex data platforms supporting end-to-end data-intensive needs, such as storage, computation, and analysis of data with heterogeneous structures. However, a smart and comprehensive support for data scientists and architects to govern the data through the whole life-cycle is still necessary. Supporting data management and governance requires the collection of metadata capturing the distinguishing features of the data; this enables advanced functionalities spanning from data research and profiling to provenance control, orchestration of data pipelines, incremental data integration, efficient querying, automated analytics, and homogeneous data access. The challenges begin with metadata management in terms of the modeling effort, storage, complexity of retrieval activities, and effective exploitation. While coping with big-data issues, the enabled functionalities must: (i) handle the heterogeneity of storage and computation engines (including DBMSs supporting multiple data models and cloud storage systems with limited control and predictability), (ii) meet suitability requirements for less-skilled users, and (iii) limit the costs of pay-as-you-go resources.

DataPlat calls for innovative solutions — from researchers and practitioners — that address the aforementioned challenges. We welcome papers that contribute to the advancement of data platforms in engineering, optimizing, and simplifying the different aspects of data and metadata management and fruition.

For more information, please check <https://big.csr.unibo.it/dataplat2023/>

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