

The Workshops of the EDBT/ICDT 2025 Joint Conference

March 25, 2025

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 28th International Conference on Extending Database Technology (EDBT) and the 28th International Conference on Database Theory (ICDT), held on March 25, 2024 in Barcelona, Spain.

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, five 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 four workshops, while the last one runs its own proceedings):

- EDBT PhD Workshop 2025
- 7th International Workshop on Big Mobility Data Analytics (BMDA)
- 9th International Workshop on Data Analytics solutions for Real-Life APplications (DARLI-AP)
- 1st International Workshop on Transforming Graph Data (TGD)
- 27th International Workshop on 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,

Matthias Boehm, Technische Universität Berlin (Germany)

Khuzaima Daudjee, University of Waterloo (Canada)

[EDBT 2025 Ph.D. Workshop](#)

We are happy to present the proceedings of the 2025 EDBT Ph.D. Workshop. The workshop was co-located with the 28th International Conference on Extending Database Technology (EDBT 2025) in Barcelona, Spain and was held on March 25, 2025. We assembled a program consisting of four papers which were accepted out of the five submissions we received. The papers span a wide spectrum of Ph.D. topics relevant to database research.

The workshop program included a keynote talk presented by Carsten Binning (TU Darmstadt, Germany) on *Databases Unleashed - Rethinking Relational Databases in the Age of LLMs (or "Why it is now the right time for a PhD in Databases)"*. A further invited talk was presented by Rihan Hai (TU Delft, The Netherlands) on *Beyond the PhD: Adventures in Data, ML, and Quantum*. New for 2025 was the organization of a poster session, which was open for presentations by Ph.D. students from all accepted papers of the EDBT main conference and its associated workshops. Moreover, attendance to the entire Ph.D. workshop and poster session was open and free of charge for all EDBT attendees. The poster session featured 26 posters and received a high level of interest among many EDBT attendees.

We thank Bettina Kemme and Alkis Simitsis, the EDBT 2025 PC chairs, as well as Anna Queralt and Oscar Romero, the general chairs, who entrusted us with this role. Our special thanks are also dedicated to Sergi Nadal for his great support with the website, and to the whole local and technical organizing team. Finally, we thank our workshop program committee, who did a great job in 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!

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Data Analytics solutions for Real-Life APplications (DARLI-AP)

In today's world, two interwoven trends are shaping the technological landscape: (1) the rapid evolution of digital devices, enabling the collection of vast and ever-expanding datasets, and (2) groundbreaking progress in data science, machine learning, and deep learning. These fields have become indispensable tools with broad-ranging applications, driving innovation across industries and reshaping society as a whole.

Effectively harnessing data science and machine learning opens the door to novel and unconventional approaches for addressing emerging challenges associated with the massive influx of real-world data. While these algorithms hold immense potential, their full impact remains largely untapped. Researchers and industry professionals are exploring ways to embed intelligence into real-world applications, driving forward new avenues of research and enabling the development of smarter, more efficient services.

The DARLI-AP workshop serves as a collaborative platform for academics and practitioners from diverse disciplines to exchange insights and experiences in developing cutting-edge analytics solutions. By leveraging advanced data science, machine learning, and deep learning techniques, participants showcase how these technologies can transform real-world applications. The workshop has continued to grow, attracting an expanding community of researchers and industry experts. In its ninth edition, DARLI-AP features 15 research papers, contributed by 78 authors (approximately 38% female and 62% male), presenting innovative methodologies that span all stages of the data analytics process. These contributions not only advance the field but also drive the design and implementation of new, unconventional, and impactful data-driven services.

The DARLI-AP program features a keynote speech by *Josep Lluís Berral* (Universitat Politècnica de Catalunya, Barcelona Supercomputing Center) titled *"On the Use of Data Analytics as a Principal Workload in Supercomputing Research Centers"*.

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

- The authors for submitting their research papers to the workshop;
- The keynote speaker, Josep Lluís Berral, who gave us the honor to present his recent research activity and vision at DARLI-AP 2025;
- 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 2025 chairs - for their trust and valuable support.

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Transforming Graph Data (TGD)

Graphs are widely used to model interconnected real-world entities, requiring efficient storage, processing, and analysis. While a diverse ecosystem of graph database systems has emerged to tackle these challenges, graph transformation mechanisms remain underdeveloped. Critical gaps include the lack of formal frameworks for defining and applying graph transformations, as well as the absence of expressive syntactic and semantic primitives for querying temporal properties such as timeliness and versioning. Additionally, advancing interoperability, reliability, scalability, and adaptive learning in graph transformation ecosystems demands new models, techniques, and a deeper exploration of generative AI's role in automating and optimising these processes.

The TGD workshop received nine high-quality submissions, of which five were accepted, resulting in an acceptance rate of 55%. The accepted papers reflect diverse research contributions on graph transformations and their applications.

Several papers explored the role of Property Graphs in different domains, including legislative knowledge management, where graph-based models facilitate structured law versioning and intelligent monitoring. Others examined the interoperability between Property Graphs and RDF, proposing flexible mapping frameworks to improve expressiveness and integration. A logic-based approach to scalable graph transformations was also introduced, leveraging parallel databases to enhance efficiency in querying and modifying large-scale graphs. Additionally, a hybrid model unifying Property Graphs and time-series data was presented, enabling dynamic transformations and real-world applications such as mobility analytics. Finally, work on the semantic translation of Property Graphs showcased methods for preserving structure and meaning when converting them into RDF for knowledge graph construction. These contributions highlight the expanding role of graph transformations in tackling real-world challenges.

In addition, the workshop featured two keynote presentations.

Juan Reutter (Pontificia Universidad Católica de Chile & Instituto Milenio Fundamentos de los Datos, Chile) delivered a talk on *“Revisiting Queries and Transformations in Graph Learning.”* He explored how graph database tools enhance graph machine learning, focusing on (1) using graph query languages for neuro-symbolic query answering under uncertainty and (2) leveraging graph foundational models to generalise across unknown schemas. He concluded by discussing how these techniques reintegrate into graph databases, addressing emerging challenges and opportunities at their intersection.

Yuanyuan Tian (Microsoft, Spain) presented *“The World of Graph Databases from an Industry Perspective”*. She examined the increasing demand for graph technologies, driven by the rapid growth of social networks and graph data. Her talk highlighted the gap between academic research and industry, emphasising the lack of comprehensive surveys on graph technologies from an industrial viewpoint. She discussed bridging this gap by providing insights into industry trends and challenges.

The program also featured a panel discussion on *“The Future of Graph Transformations,”* moderated by TGD co-organiser Riccardo Tommasini (INSA Lyon, LIRIS, CNRS, France). The panel included the two keynote speakers alongside distinguished guests Angela Bonifati (Université Lyon 1, LIRIS, CNRS, IUF, France) and Leonid Libkin (IRIF, University of Edinburgh, RelationalAI, France), as well as TGD co-organiser Stefania Dumbrava (ENSIIE & Télécom SudParis, France).

The TGD organisers extend their heartfelt thanks to everyone who contributed to the success of this inaugural workshop:

- The authors, for their valuable research contributions and enriching discussions.
- The keynote speakers, Juan Reutter and Yuanyuan Tian, for honouring us with their presence and presentations and for inspiring new directions in graph data transformation research.
- The invited panellists, Angela Bonifati and Leonid Libkin, for sharing their extensive expertise and insightful perspectives on graph database management and graph transformations.
- The Program Committee members, for their diligent efforts in providing constructive and valuable feedback to authors.
- The EDBT/ICDT 2025 workshop and general chairs for their trust, patience, and guidance.

This first edition of the TGD workshop would not have been possible without the support of everyone involved. We are deeply grateful for this success and look forward to its continuation.

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