ICPE'23 GraphSys Workshop Chairs Introduction (Welcome)

It is our great pleasure to welcome you to the *2023 ACM/SPEC Workshop on Serverless, Extreme-Scale, and Sustainable Graph Processing Systems*. This is the first such workshop, aiming to facilitate the exchange of ideas and expertise in the broad field of high-performance large-scale graph processing.

Graphs and GraphSys

The use, interoperability, and analytical exploitation of graph data are essential for modern digital economies. Today, thousands of computational methods (algorithms) and findable, accessible, interoperable, and reusable (FAIR) graph datasets exist. However, current computational capabilities lag when faced with the complex workflows involved in graph processing, the extreme scale of existing graph datasets, and the need to consider sustainability metrics in graph-processing operations. Needs are emerging for graph-processing platforms to provide multilingual information processing and reasoning based on the massive graph representation of extreme data in the form of general graphs, knowledge graphs, and property graphs. Because graph workloads and graph datasets are strongly irregular, and involve one or several big data "Vs" (e.g., volume, velocity, variability, vicissitude), the community needs to reconsider traditional approaches in performance analysis and modeling, system architectures and techniques, serverless and "as a service" operation, real-world and simulation-driven experimentation, etc., and provide new tools and instruments to address emerging challenges in graph processing.

Graphs or linked data are crucial to innovation, competition, and prosperity and establish a strategic investment in technical processing and ecosystem enablers. Graphs are universal abstractions that capture, combine, model, analyze, and process knowledge about real and digital worlds into actionable insights through item representation and interconnectedness. For societally relevant problems, graphs are extreme data that require further technological innovations to meet the needs of the European data economy. Digital graphs help pursue the United Nations Sustainable Development Goals (UN SDG) by enabling better value chains, products, and services for more profitable or green investments in the financial sector and deriving trustworthy insight for creating sustainable communities. All science, engineering, industry, economy, and society-at-large domains can leverage graph data for unique analysis and insight, but only if graph processing becomes easy to use, fast, scalable, and sustainable.

GraphSys is a cross-disciplinary meeting venue focusing on state-of-the-art and the emerging (future) graph processing systems. We invite experts and trainees in the field, across academia, industry, governance, and society, to share experience and expertise leading to a shared body of knowledge, to formulate together a vision for the field, and to engage with the topics to foster new approaches, techniques, and solutions.

Technical content

In this first edition, the workshop received 12 submissions from which, after peer review, it accepted for publication 6. Highlights include material focusing on components needed to achieve serverless, scalable, and sustainable graph processing, socio-technical strategies to boost the impact of extreme and sustainable graph processing for urgent societal challenges in Europe, graph neural networks for anomaly anticipation in HPC systems, and the metaphactory approach for massive graphs.

Reviewers

This year's GraphSys is the result of the collaboration of many people, authors, reviewers, and the organizing committee. We thank them all.

Acknowledgments

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In time, we aim to align GraphSys with the Standard Performance Evaluation Corporation (SPEC)'s Research Group (RG), and, in particular, the RG Cloud Group that is taking a broad approach, relevant for both academia and industry, to cloud benchmarking, quantitative evaluation, and experimental analysis.

Further acknowledgments
We further thank the ICPE 2023 Program and Workshop Chairs, for their active support. We could not have done this without you!

Concluding remarks
We hope GraphSys'23 will be the first in a focused yearly series, aiming to develop the topic and around it a community of knowledge and practice.

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