Preface

The International Semantic Web Conference (ISWC), started in 2002, aims to provide a platform for Semantic Web researchers and practitioners from around the world to share and exchange advanced techniques, and experiences in Semantic Web and related areas. Now in its 22nd edition, the ISWC has become the flagship conference for the Semantic Web and Knowledge Graph community to discuss and present the latest advances in machine-understandable semantics, large-scale knowledge resource construction, logical reasoning, and semantic interoperability and multi-agent applications.

ISWC continues its tradition of being the premier international forum, having been hosted in 9 countries and 20 cities worldwide since its inception. This year, ISWC 2023 convened in Athens, Greece, bringing together researchers, practitioners, and enthusiasts in the Semantic Web and Knowledge Graph community for valuable face-to-face interactions and discussions. ISWC 2023 received 411 submissions, authored by 1,457 distinct authors from 46 different countries, reflecting the ever-growing interest and participation in the field. Building on the rigorous reviewing processes of previous editions, our review processes this year were equally comprehensive and constructive. Each submitted paper underwent meticulous evaluation, considering criteria such as originality, novelty, empiricism, and reproducibility. We extend our heartfelt gratitude to all the authors, reviewers, and organizers who have contributed to making this conference possible.

The recent upsurge in Artificial Intelligence (AI) driven by Large Language Models (LLMs) brings new challenges and opportunities to the Semantic Web and Knowledge Graph community. LLMs have massive parameterized knowledge, can generate fluent content, engage in natural language interactions with humans, and have the ability to accomplish multi-scenario tasks. At the same time, we notice that LLMs still have some limitations in terms of knowledge hallucination and interpretability, as well as the planning ability of knowledge reasoning and complex problem-solving. Currently, we need to re-examine the relationship between LLMs and Semantic Web and Knowledge Graphs. This conference also hopes to fully communicate and discuss these problems, and together promote the research and application of combining knowledge-driven and data-driven AI.

In-depth exploration of these various aspects was addressed in invited keynotes given by three distinguished professors, and a panel with invited panelists from industry and academia. The keynote of Gerhard Weikum was entitled "Knowledge Graphs in the Age of Large Language Models" and outlined research opportunities that could leverage synergies between LLMs and Knowledge Graphs. Deborah L. McGuinness's keynote was entitled "Semantic Web Research in the Age of Generative Artificial Intelligence" and rethinks how generative AI holds great potential for Semantic Web research and applications in general and ontology-related work. The keynote entitled "ChatGLM: An Alternative to ChatGPT", presented by Jie Tang, introduced and discussed technical details on how to build a ChatGPT-style intelligent system and shared lessons learned

during the development of ChatGLM. A panel led by Vassilis Christophides and Heng Ji delved into the topic of neuro-symbolic AI, which aims to enhance statistical AI (machine learning) with the complementary capabilities of symbolic AI (knowledge and reasoning).

The research track was chaired by Terry Payne and Valentina Presutti, and in keeping with previous conferences, solicited novel and significant research contributions addressing theoretical, analytical, and empirical aspects of the Semantic Web. A total of 170 full paper submissions were received across a broad set of topics. As with previous years, the most popular topics included knowledge representation and reasoning, and the construction and use of Knowledge Graphs. Many submissions focused on the use of reasoning and query answering, with a number addressing engineering, maintenance, and alignment tasks for ontologies. Likewise, there was a healthy batch of submissions on search, query, integration, and the analysis of knowledge. Finally, following the growing interest in neuro-symbolic approaches, there was a rise in the number of studies that focus on the use of Large Language Models and Deep Learning techniques such as Graph Neural Networks.

As ever, the Program Committee (PC) was fundamental in reviewing and providing guidance to the papers, both in determining what should be accepted in terms of maturity and quality, and in shaping the final version of each paper through detailed comments and recommendations. For this, we had the help of 264 PC members from 34 countries, and a further 39 Senior Program Committee (SPC) members who helped oversee the reviewing process and were responsible for drafting the meta-reviews for all of the papers. Finally, an additional 56 external reviewers, solicited by PC members, assisted by contributing valuable additional reviews to the process. Continuing the trend of previous editions of ISWC, the Research Track was double-blind, with each paper receiving at least three reviews, and the majority getting four. Reproducibility and novelty continued to be a fundamental component of every submission, with the requirement to provide supplementary material wherever possible. In the end, 33 papers were accepted, resulting in an acceptance rate of 19.4%, which was consistent with that of previous research tracks at ISWC.

The Resources Track, chaired by Guilin Qi and María Poveda-Villalón, focused on the promotion and sharing of resources that support, enable, or utilize Semantic Web research, and in particular datasets, ontologies, software, and benchmarks, among others. This track received 70 papers for review. Each paper was subject to a rigorous single-blind review process involving at least three PC and SPC members, and program chairs considered both the papers and the author responses. The main review criteria focused on impact (novelty of the resource), reusability, design and technical quality, and availability. Eventually, 17 papers were accepted. The Resources Track was aided by 7 SPC and 54 PC members, and 12 additional reviewers.

The In-Use Track this year was chaired by Giorgos Stoilos and Laura Hollink. This track provides a forum to explore the benefits and challenges of applying Semantic Web and Knowledge Graph technologies in concrete, practical use cases, in contexts ranging from industry to government and society. In total, eight full papers were accepted out of 25 full paper submissions (32% acceptance rate). All submissions were thoroughly reviewed in a single-blind process by at least three and in some cases even four PC

members. Submissions were assessed in terms of novelty (of the proposed use case or solution), uptake by the target user group, demonstrated or potential impact, as well as overall soundness and quality. An Objection and Response phase was also implemented this year in line with the other tracks of the conference. Overall, 32 PC members and three additional reviewers participated in a rigorous review process.

The Industry Track, this year chaired by Daniel Garijo and Jose Manuel Gomez-Perez, covers all aspects of innovative commercial or industrial-strength Semantic Technologies and Knowledge Graphs to showcase the state of adoption. This track received 19 papers for review, of which 12 were accepted (63% acceptance rate) following a single-blind review process. The 17 members of the PC assessed each submission in terms of qualitative and quantitative business value, as well as the innovative aspects, impact, and lessons learned of applying Knowledge Graph and semantic technologies in the application domain.

The Workshop and Tutorial Track, chaired by Heiko Paulheim and Bo Fu, presented a total of 10 selected workshops covering established and emerging topics as part of the conference program, including knowledge engineering and management (e.g., ontology design and patterns, knowledge base construction, evolution, and preservation), acquisition, integration, and manipulation of knowledge (e.g., ontology matching, as well as the storing, querying, and benchmarking of knowledge graphs), visualization and representation of knowledge for human users (e.g., interactive visual support for ontologies, linked data, and knowledge graphs), applied emerging areas that assist the advancement of Semantic Web research (e.g., deep learning for knowledge graphs), as well as semantic technologies in use (e.g., industrial information modeling, ontology design for cultural heritage, and open knowledge bases such as Wikidata). In addition, two tutorials were offered as part of the conference program to foster discussions and information exchange for researchers and practitioners working to overcome challenges surrounding knowledge discovery in spatial data and neuro-symbolic artificial intelligence for smart manufacturing.

The Semantic Web Challenges Track was jointly chaired by Valentina Ivanova and Wen Zhang. Four challenges were selected for the track, all of them held before in some of the previous editions of either the ISWC or ESWC conference series. Each of the challenges provides a common environment and datasets to evaluate and compare the systems in various settings and tasks. The challenges covered various topics ranging from reasoners evaluation to creating knowledge graphs from tabular data as well as from pretrained language models and query answering. Two of the challenges were collocated with workshops focusing on similar topics, which provided a ground for extended discussion around emerging research and demonstrating it in proof-of-concept solutions. The accepted challenges were: 2nd edition of LM-KBC: Knowledge Base Construction from Pretrained Language Models (collocated with the 1st Workshop on Knowledge Base Construction from Pre-Trained Language Models (KBC-LM)), 2nd edition of The Scholarly QALD Challenge, 5th edition of SemTab: Semantic Web Challenge on Tabular Data to Knowledge Graph Matching (collocated with the 18th International Workshop on Ontology Matching) and the 3rd edition of Semantic Reasoning Evaluation Challenge (SemREC 2023).

The Posters and Demos Track was chaired by Irini Fundulaki and Kouji Kozaki. This track complements the paper tracks of the conference by offering an opportunity to present late-breaking research results, on-going projects, and speculative as well as innovative work in progress. The Posters and Demos Track encourages presenters and participants to submit papers that have the potential to create discussions about their work that provide valuable input for the future work of the presenters. At the same time, it offers participants an effective way to broaden their knowledge on a variety of research topics and to network with other researchers. This track received 101 papers for review, of which 57 were accepted (56% acceptance rate). Among the accepted papers, 29 were poster papers and 28 were demo papers. The 55 members of the PC were involved in a double-blind review process and assessed each submission based on a variety of criteria such as novelty, relevance to the Semantic Web, impact, technical contribution, and readability.

The Doctoral Consortium (DC) was chaired by Claudia d'Amato and Jeff Pan. The DC is another fundamental event of ISWC. It gives PhD students the opportunity to present their research ideas and initial results and to receive constructive feedback from senior members of the community. This year's DC received 24 submissions. Each submission was reviewed by three members of a PC that consisted of 35 members in total. Based on the reviews, which were managed in agreement with a single-blind review process, 17 submissions were accepted to be published in the DC proceedings edited by CEUR, and the students of these submissions were invited to present their ideas and work during the DC sessions of the conference, where they received further feedback from senior conference attendees. The DC also hosted a career-advice session, consisting of senior researchers providing career advice with an open Q&A session.

Our thanks go to our local organization team, led by local chair Manolis Koubarakis, Dimitris Plexousakis, and George Vouros, who worked tirelessly to ensure a seamless conference experience. Their meticulous management of all conference activities was truly commendable.

We would like to thank the diligent work of Zoi Kaoudi and Gong Cheng, who have been instrumental in the preparation of the ISWC 2023 proceedings. Their efforts have not only ensured the quality of the conference materials but have also facilitated the sharing of conference data in a reusable and open format.

The success of ISWC 2023 has been widely disseminated within the Semantic Web and Knowledge Graph community, thanks to the tireless efforts of Ioannis Chrysakis, Ioannis Karatzanis, and Lei Hou. Their unwavering commitment to spreading news and updates has greatly contributed to the conference's visibility and reach.

Sponsorship plays a pivotal role in bringing the conference to fruition. We would like to express our gratitude to sponsorship chairs Haofen Wang, Andrea Nuzzolese, and Evgeny Kharlamov, who worked tirelessly to secure support and promote the conference to our sponsors, making ISWC 2023 possible in its current form. We also extend our sincerest thanks to all our sponsors for their invaluable contributions. Also, we are especially thankful to our Student Grants Chairs, Cogan Shimizu and Eleni Tsalapati, whose hard work enabled students to actively participate in this conference.

Finally, our heartfelt gratitude extends to the entire organizing committee, a dedicated family of chairs who have embarked on this complex yet remarkable journey to

deliver ISWC 2023. We would also like to express our appreciation to the Semantic Web Science Association (SWSA) for their invaluable support and constant presence throughout ISWC's 22 year history.

Juanzi Li, ISWC 2023 General Chair, on behalf of all the editors.

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