

Preface for Joint Proceedings of Posters, Demos, Workshops, and Tutorials of SEMANTiCS 2024

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1. Preface

This volume contains the proceedings of the Poster and Demo Track of the 20th International Conference on Semantic Systems, SEMANTiCS 2024, which took place from September 17-19, 2024, in Amsterdam. It also features the proceedings of the First International Workshop on Scaling Knowledge Graphs for Industry, along with an overview of the NeXt-generation Data Governance Workshop 2024 (NXDG 2024), both of which were co-located with SEMANTiCS 2024.

SEMANTiCS is the annual meeting place for professionals who make semantic computing work, understand its benefits, and encounter its limitations. Every year, SEMANTiCS attracts information managers, IT architects, software engineers, and researchers from organizations ranging from research facilities and NPOs through public administrations to the largest and/or most innovative companies in the world. Conference participants learn from top researchers and industry experts about emerging trends and topics in the wide area of semantic computing. The SEMANTiCS community is highly diverse; attendees have responsibilities in interlinking areas such as Artificial Intelligence, knowledge discovery and management, bigdata analytics, e-commerce, enterprise search, technical documentation, document management, business intelligence, and enterprise vocabulary management.


1.1. Posters & Demo Track

The Posters & Demos Track provides a platform for researchers to showcase their latest findings, ongoing projects, and cutting-edge work in progress. Submissions include innovative applica-

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tions, latest results, unpublished ideas, prototypes of semantic technologies and their use in various domains, as well as applications, use cases, or pieces of code that may attract developers and potential research or business partners. This also concerns new datasets made publicly available. The Posters & Demos Track offers an informal setting that promotes engagement and dialogue between presenters and attendees. These discussions can provide valuable feedback for the presenters' future work while also allowing participants to gain insight into emerging research trends and network with other researchers.

This year, the SEMANTiCS conference especially welcomed submissions on the following cutting-edge topics:

- Web Semantics & Linked (Open) Data
- Enterprise Knowledge Graphs, Graph Data Management
- Machine Learning Techniques for/using Knowledge Graphs (e.g. reinforcement learning, deep learning, data mining and knowledge discovery)
- Interplay between generative AI and Knowledge Graphs (e.g., RAG approach)
- Knowledge Management (e.g. acquisition, capture, extraction, authoring, integration, publication)
- Terminology, Thesaurus & Ontology Management, Ontology engineering Reasoning, Rules, and Policies
- Natural Language Processing for/using Knowledge Graphs (e.g. entity linking and resolution using target knowledge such as Wikidata and DBpedia, foundation models)
- Crowdsourcing for/using Knowledge Graphs
- Data Quality Management and Assurance
- Mathematical Foundation of Knowledge-aware AI
- Multimodal Knowledge Graphs
- Semantics in Data Science
- Semantics in Blockchain environments
- Trust, Data Privacy, and Security with Semantic Technologies
- IoT, Stream Processing, dealing with temporal data
- Conversational AI and Dialogue Systems
- Provenance and Data Change Tracking
- Semantic Interoperability (via mapping, crosswalks, standards, etc.)
- Linked Data storage, triple stores, graph databases
- Robust and scalable management, querying and analysis of semantics and data
- User interfaces for the Semantic Web & its management
- Explainable and Interoperable AI
- Decentralised and Federated Knowledge Graphs (e.g., Federated querying, link traversal)

Application of Semantically Enriched and AI-Based Approaches included:

- Knowledge Graphs in Bioinformatics, Medical AI and preventive healthcare
- Clinical Use Case of semantic-enabled AI-based Approaches

- AI for Environmental Challenges
- Semantics in Scholarly Communication and Scientific Knowledge Graphs
- AI and LOD within GLAM (galleries, libraries, archives, and museums) institutions
- Knowledge Graphs & hybrid AI for predictive maintenance and Industry 4.0/5.0
- Digital Humanities and Cultural Heritage
- LegalTech, AI Safety, EU AI Act
- Economics of Data, Data Services, and Data Ecosystems

Twenty-five original submissions were accepted for the Posters & Demos Track, selected through a peer-reviewing process from a total of 36 poster and demo submissions. The reviewing committee included 35 members, who contributed to receiving at least 3 reviews per submission. The accepted works have been published in the CEUR Workshop Proceedings series. Papers were selected based on the review scores, potential comments, and discussions among track chairs, as well as based on their topics, to (try to) ensure a balanced and representative distribution of themes across the 2024 Poster & Demo Track.

2. Workshops and Tutorials Track

The workshops and tutorials track allow any organization or project to promote any of the 2024 SEMANTiCS research topics and gain increased visibility. 2024 workshops and tutorials are incubators for industrial and scientific communities that form and share a particular research and development agenda, and they provide a forum for presenting contributions and findings to a diverse and knowledgeable community.

This year SEMANTiCS accepted five workshops and three tutorials as part of the conference program. We briefly describe them below:

- The **International Workshop on Semantic Materials Science: Harnessing the Power of Semantic Web** (SeMats) provided an overview of existing approaches, identify relevant works, and bring together Materials Science and Semantic Web stakeholders for collaboration and innovation.
- The **Third International Workshop on Natural Language Processing** (NLP4KGC) discussed contributions on methods and approaches of knowledge and data extraction from text, as well as theoretical and practical aspects of using semantic deep NLP for KG creation and the use of such KG for Graph Neural Network (GNN) tasks.
- The **Large Language Models and Knowledge Graphs unified** workshop combined approaches using LLMs and KGs, focusing on real-life, practical use-cases under development in industry (both commercial and governmental organizations).
- The **NeXt-Generation Data Governance** workshop aimed to support the development of solutions to manage data, policies and provenance in a trustful and interoperable manner and to aid in the management and reporting of legal documentation falling from the EU's GDPR for data protection and the DGA, Data Act, AI Act and EHDS to create legally-aligned, AI-powered data ecosystems.

- The **First International Workshop on Scaling Knowledge Graphs for Industry** aimed at fostering discussion on making knowledge graph systems work at industrial scale.

As for tutorials, SEMANTiCS 2024 included the following:

- **The Ultimate Guide to Semantic Reasoning: How to enrich your data for practical applications including use with RAG & LLMs** provided an overview on the best practices of rule writing and how to use them to supercharge applications. The tutorial uses the OWL W3C standard for ontological reasoning, and the widely used Datalog for more advanced functionality such as aggregation, negation, and filtering.
- **Modeling product ontologies for industrial KG applications** discussed existing approaches to product ontology modeling from various perspectives such as iirDS, Asset Administration Shell, custom ontologies and/or eClass.
- The **Semantics in Data Spaces: Semantic Treehouse as Vocabulary Hub** tutorial described practical insights into shaping semantics within data spaces, with TNO's Semantic Treehouse as vocabulary hub as an important means.

The joint Proceedings of Posters, Demos, Workshops, and Tutorials of SEMANTiCS 2024 include overview of the “NeXt-Generation Data Governance” (NXDG) workshop and the full proceedings of the “First International Workshop on Scaling Knowledge Graphs for Industry”. Other accepted workshops will make their proceedings available online independently.

We would like to thank all authors who submitted papers, organized workshops and tutorials, and, of course, the program committee members who provided careful, thorough reviews in a quick turnaround time. We would also like to thank our local organizer, Sanne Paulusma, as well as all those helping hands that are too many to name, for supporting this year's conference and turning it into a success. We hope that these proceedings will provide you with new inspiration for your research and opportunities for partnerships with other research groups, academic and industrial participants.

3. Program Committee of the Poster & Demo Track of SEMANTiCS 2024

- Amar Tauqeer - Wageningen University
- Ana Iglesias-Molina - Universidad Politécnica de Madrid
- András Micsik - SZTAKI
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