

Knowledge Graph

4S

Semantics-driven Systems Engineering



https://www.omilab.org/activities/events/caise2024_kg4sdse/

Tuesday, June 04th, 2024 - Morning

09:00 - 10:20 Welcome & Keynote

Chair's Welcome Message, Robert Buchmann

Keynote: Neuro-Coachable AI is the Answer! What is the Question?, Loizos Michael

10:30 - 11:00 Coffee Break

11:00 - 11:25 Full paper

LLMs for Knowledge-Graphs enhanced Task-Oriented Dialogue Systems: Challenges and Opportunities, Vasile Ionuț Remus Iga and Gheorghe Cosmin Silaghi

11:25 - 11:50 Full paper

An Ontology Based Meta-modelling Approach for Semantic-Driven Building Management Systems, Emanuele Laurenzi, James Allan, Nathalie Campos and Sascha Stolle

11:50 - 12:15 Full paper

Understanding the SQL Semantic Transducer, Théo Abgrall and Enrico Franconi

12:30 - 14:00 Lunch Break

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kgworkshop@omilab.org

Limassol, Cyprus

04. June 2024

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Tuesday, June 04th, 2024 - Afternoon

14:00 - 14:25 Full paper

Knowledge Graph for Reusing Research Knowledge on Related Works in Data Analytics, Aritha Kumarasinghe and Marite Kirikova

14:25 - 14:50 Full paper

Improving the Service Quality in Fitness Industry by Using a Knowledge Graph based Modeling Toolkit, Vasile Ionut Remus Iga and Ana-Maria Ghiran

14:50 - 15:05 Short paper

Property Graphs at Scale: A Roadmap and Vision for the Future, Haridimos Kon-dylakis, Vasilis Efthymiou, Georgia Troullinou, Elisjana Ymeralli and Dimitris Plexou-sakis

15:05 - 15:20 Short paper

Enhancing Complex Linguistic Tasks Resolution through Fine-tuning LLMs, RAG and Knowledge Graphs, Filippo Bianchini, Marco Calamo, Francesca De Luzi, Mattia Macrì and Massimo Mecella

15:30 - 16:00 Coffee Break

16:00 - 17:00 Closing Discussion with the Workshop Participants

Dimitris Karagiannis (moderator): Metamodeling and Abstraction in the Era of LLMs: Challenges and Opportunities

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Neuro-Coachable AI is the Answer! What is the Question?

Loizos Michael is a Professor of Computational Cognition at Open University of Cyprus

The emergence and surge of Generative AI is a technological feat that has followed a path of least resistance given the availability of enormous computational power, massive quantities of data, and lazy human supervision. The utilization of learning as an end goal in itself, and the training of models whose internal structure and latent concepts are misaligned with human cognition, have inexorably led to a perception of AI as something foreign and superior to humans. Trust in AI comes, then, as a necessary evil, supported only by the inward-facing confidence and the model-driven explanations that the AI itself has to offer in support of its own claims and predictions.

Looking towards a future of AI that will be familiar to humans and available to assist when and as needed, and where trust in AI will come through the offering of convincing explanations in support of its contested claims and predictions, we argue that we need to rethink the path forward: to appreciate the role of learning as a means to end-user satisfaction, rather than to predictive accuracy; to understand in a principled manner the interaction between learning and reasoning; and to acknowledge that a substantially more engaging form of human supervision is fundamental for the development of AI whose internal structure and concepts are aligned with those of humans. Neuro-coachable architectures – which combine deep learning models with symbolic policies that are human coachable and autodidactically learnable – offer a promising substrate for the formal exploration of these questions, by bringing AI closer to human cognition without voiding the substantial progress made in the development of data-driven AI technologies.



Loizos Michael
loizos@ouc.ac.cy

Loizos Michael is a Professor of Computational Cognition at Open University of Cyprus, where he has served as the program director of the cross-institutional M.Sc. Program in Cognitive System. He is a founding member of the CYENS Center of Excellence, within which he leads the research pillar on Artificial Intelligence and Communications. He received a B.Sc. in Computer Science with a minor degree in Mathematics from University of Cyprus, graduating top of the class of 2002, and receiving the Republic of Cyprus Presidential Award. He continued his education at Harvard University, where he received an M.Sc. and a Ph.D. in Computer Science (Artificial Intelligence) in 2008. His research work lies at the intersection of Artificial Intelligence and Theoretical Computer Science, and focuses on the computational modeling of learning, reasoning, and other cognitive processes associated with individual and collective intelligence, as a step towards the design and development of cognitive assistants that can interact naturally and collaboratively with humans.