



# **LDAC2023**

## **11th Linked Data in Architecture and Construction Workshop**

Proceedings of the 11th Linked Data in  
Architecture and Construction Workshop  
(LDAC 2023)

Matera, Italy, June 15-16, 2023

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(eds)



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## Preface

The LDAC workshop series provides a focused overview on technical and applied research regarding the usage of semantic web, linked data and web of data technologies for architecture and construction (design, engineering, construction, operation, etc.). The workshop aims at gathering researchers, industry stakeholders, and standardization bodies of the broader Linked Building Data (LBD) community. The aim of the workshop is to present current developments in research and development, coordinate efforts, gather stakeholders, and extend industry uptake and collaboration.

We are pleased to collect in this volume the papers that were submitted and presented during the 11th Linked Data in Architecture and Construction (LDAC) Workshop. The workshop took place on 15 and June 2023, as a stand-alone event in Matera, Italy. The workshop was preceded by an extensive 3-day summer school. The workshop hosted fifteen full papers, 3 short papers, and 8 industry submissions. Full and short papers were reviewed by the members in the program committee, and industry submissions were reviewed by the LDAC team. All submissions, including industry submissions can be found in these proceedings.

The workshop also included three excellent keynote on three diverse topics, one of them hosted during the SSoLDAC Summer School. The first keynote, by Michela Mortara (CNR – IMATI Genova) was titled “Shape and Semantics for urban modelling – the role of geometry in city digital twins”. This keynote talk described an overview of computer graphics approaches to construct a digital 3D representation of an urban context from real data. This includes the identification of salient elements and linking semantic information to their geometric counterparts. Examples of use cases that the geometric layer of the urban digital twin can answer to were discussed from ongoing projects with Matera and Catania.

The second keynote was given by Danh Le Phuoc (TU Berlin), with the title “Connect Sensors to Perception via Semantic Stream”. In this talk, Prof. Le Phuoc presented how to use semantic streams to connect sensory data to perception systems for robots, drones or cars to understand their surroundings, e.g roads, buildings and physical objects. An explanation is given of how semantic and episodic

memories are represented as semantic and stream graphs to integrate and fuse various kinds of sensory observations, e.g, images, videos and point clouds, into interlinked sub-symbolic and symbolic data streams at different levels of semantic abstractions.

The third and last keynote was presented by Prof. Francesca Lisi (Università degli Studi di Bari "Aldo Moro"), with the title “Data-driven AI vs. Model-driven AI: Which one should we trust more?”. Artificial Intelligence (AI) is currently gaining an increasing attention, also from the media, thanks to an impressive number of successful applications in a wide variety of domains. This keynote talk discusses there recent developments in AI, showing also their limits, in particular the presence of bias - the presence of undesirable prejudices and stereotypes in the data - and where it comes from. In extension, an overview is given of some of the ethical guidelines for a trustworthy AI that were recently defined by the AI High-level Expert Group of the European Commission. It is expected that the most interesting AI applications are yet to come, and will rely on the combination of data-driven and model-driven approaches.

## **Acknowledgments**

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Special thanks go to the sponsors of this workshop, with bSDD and Pallas as diamond sponsors, Neanex, OntoText, AEC3, Building Digital Twin Association (BDTA), BimConnected, Amberg Group, and Tennet as gold sponsors, and Basilicata Creativa as silver sponsor.

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