



# ARTISTE2025

14-17 September 2025 – Politecnico di Torino, Turin, Italy  
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*Special Session Title:*

## Emerging Applications of Large Language Models (LLMs) for Structural Engineering

### Organizers

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### Abstract

The advent of Large Language Models (LLMs) is triggering a profound transformation in the field of engineering and structural computation, heralding a radical shift in design and analysis processes. This presentation aims to explore how such models transcend the role of mere automation tools to emerge as genuine cognitive partners.

We will discuss emerging methodologies that enable LLMs to interact with computational software, interpret complex data, and assist in the generation of preliminary models. The most concrete opportunities will be examined, such as accelerating iterative design cycles through the optimization of complex solutions and the verification of regulatory compliance.

However, an in-depth analysis cannot overlook critical challenges. Key issues will be addressed regarding the reliability of generated data and the urgent need to develop rigorous validation protocols, essential to ensure the integrity and safety of structural analyses and thus shape the future of the profession.

The Special Issue will be devoted to the design, modelling, analysis, construction, and other aspects of the technology of all types of shell and spatial structures. These may include, but are not limited to:

- Cognitive Role of LLMs – Moving beyond automation to become partners in structural design and analysis.
- Integration with Computational Tools – Enabling interaction with structural software, data interpretation, and preliminary model generation.
- Opportunities for Acceleration – Optimizing complex solutions, speeding up iterative design cycles, and ensuring regulatory compliance.
- Critical Challenges – Addressing data reliability, validation protocols, and safety in structural analysis.

This Special Session is technically sponsored by **S.T.A. DATA srl**



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