

WORKSHOP (EN)



ROME (AND ONLINE)
CENTRO CONGRESSI ROMA EVENTI
FONTANA DI TREVÌ, VIA DELLA PILOTTA 4
30.09.2026



TIME
14.00 - 18.30

ARTIFICIAL INTELLIGENCE AND STEELWORK STRUCTURAL DESIGN... LET'S GET STARTED!

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PER LA PARTECIPAZIONE AL SEMINARIO
SONO STATI RICHIESTI 4 CFP AL CNI

WORKSHOP ORGANIZED WITH
THE INTERNATIONAL ASSOCIATION OF
ARTIFICIAL INTELLIGENCE IN
STRUCTURAL ENGINEERING
[HTTPS://ARTISTE.POLITO.IT/](https://artiste.polito.it/)

PRESENTATION:

This workshop provides a practical perspective on the implementation of advanced Artificial Intelligence (AI) techniques, parametric modeling, and optimization-driven processes in the design and construction of steel structures.

Key questions addressed during the workshop:

- How can AI and parametric optimization be effectively integrated into professional practice?
- Which technical and economic aspects should be prioritized to maximize efficiency?
- Where is AI currently applied in structural design and construction, and what are the next milestones?

PROGRAM:

Welcome and Introduction

Domenico ASPRONE – Università di Napoli

Artificial Intelligence in Structural Engineering

Giuseppe Carlo MARANO – Politecnico di Torino

How to translate a project into an optimization problem

Raffaele CUCUZZA – Politecnico di Torino

AI-informed for the design of gridshell structures

Amedeo MANUELLO – Politecnico di Torino

Use of AI in the Design and Construction of Steel Structures

Mark SARKISIAN – SOM

Generative AI for Structural Engineering: A Practical Framework

Daniel BICHARA – Northpark

Round-table discussion

Cocktail in the exhibitors area of the CTA Conference

The workshop will take place in the venue of the CTA conference and will be held in presence. The event will be also transmitted online with the possibility to follow it in remote mode.

Inscription fee: €80

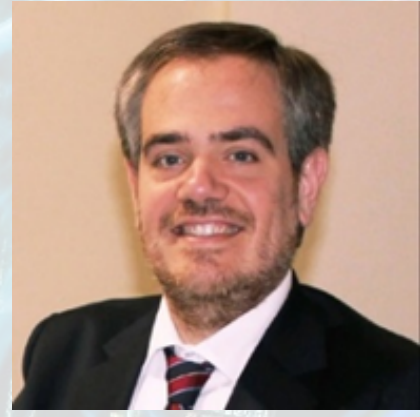
For CTA Members: €60

FREE for CTA Congress attendees (registration required)

Values are VAT (22%) excluded

Domenico ASPRONE – Università di Napoli

Domenico Asprone is Full-professor of Structural Engineering at the University of Naples Federico II. His research investigates how digital technologies, such as AI, 3D concrete printing, and Building Information Modeling (BIM), can transform the design, construction, and management of civil infrastructure, with an emphasis on sustainability and resilience. He leads research at the crossroads of structural engineering, environmental responsibility, and digital innovation, collaborating closely with public institutions and industry. He serves as Chair of the fib Commission on Sustainability, contributing to the international development of sustainable structural design practices. His current work focuses on AI-driven structural analysis and optimization, digitally fabricated structures, LCA-based sustainability assessment, and strategies for structural robustness under uncertainty.



Giuseppe Carlo MARANO– Politecnico di Torino

Giuseppe Carlo Marano is a scientist and structural engineer internationally recognized as a leader in applying Artificial Intelligence (AI) and Machine Learning (ML) to structural engineering. He is widely known for his research in structural optimization of new and existing buildings and bridges, structural identification, and seismic protection. His pioneering work leverages AI to improve the performance, cost-efficiency, and sustainability of existing structures and 3D-printed constructions. He has authored over 250 journal papers and more than 300 conference/book contributions, receiving over 5,000 citations and achieving an h-index of 42 (Scopus). He collaborates with ASPI SpA (Italian Highway Company) and the Italian Council for Transportation and Sustainability to validate retrofit projects. Over the past two years, he has contributed to the development of national bridge codes and has recently joined Formedil to support the definition of AI standards for the AEC (Architecture, Engineering and Construction) industry. He directs the ARTISTE research group (ARTificial Intelligence in SStructural Engineering) and is establishing an international AI research center for structural engineering at Henan Technological University. He served as the General Chair (Main Chair) of ARTISTE 2025, the first world conference on AI in Structural Engineering, a groundbreaking initiative that attracted over 250 participants from across the world. He is also the Founder and President of the newly established International Association ARTISTE, connecting researchers and industry professionals working on AI applied to structural engineering.



Raffaele CUCUZZA – Politecnico di Torino

Raffaele Cucuzza is a Global Marie Skłodowska-Curie Research Fellow at the Bartlett School of Sustainable Construction, University College London (UCL), ranked #1 in the QS WorldUniversity Rankings for Built Environment. During his fellowship, he will undertake research secondments at Northeastern University, the University of Cincinnati and the Massachusetts Institute of Technology (MIT). He is the Principal Investigator of the EU funded REACT project (“Reusing steel for Emission reduction through AI-driven Cutting-stock Tool”), which secured nearly €500,000 from the EU Council. The project aims to develop an AI-driven digital platform for the optimal design of steel structures using reused structural elements, supporting circular economy principles and reducing carbon emissions in the construction sector. Dr. Cucuzza obtained his MSc in Structural Engineering (2019) and PhD in Civil Engineering (2023), with honors, from Politecnico di Torino. From 2023 to 2026, he served as Research Fellow at Politecnico di Torino and Adjunct Associate Professor at Henan University of Technology (China). His research focuses on structural optimization and AI-driven design for civil infrastructure, with emphasis on sustainable and circular steel structures. He has authored more than 70 scientific publications (h-index 21) and serves as Associate Editor for international journals published by Elsevier and Springer.



Amedeo MANUELLO– Politecnico di Torino

Amedeo Manuella Bertetto is Associate professor of Structural Mechanics. His research is related to Gridshell structures combine structural efficiency and architectural freedom, yet their design involves complex interactions between geometry, material behavior, and performance constraints. The talk proposes an AI-informed design framework that integrates machine learning within parametric and performance-based workflows for sustainable and reuse of steel elements for grid shells optimization. By leveraging multi-objective optimization and data driven models it is possible to predict structural behavior and guide geometric shaping of shells and spatial structures. The approach supports early-stage decision-making and accelerates exploration of high-performing solutions. The results demonstrate how AI can enhance design efficiency, material optimization, and sustainability in gridshell structures while maintaining engineering reliability.



Mark SARKISIAN – SOM

Mark Sarkisian, PE, SE, NAE, LEED BD+C, is a Partner of Structural and Seismic Engineering at Skidmore, Owings & Merrill in San Francisco, California. He received his BS Degree in Civil Engineering from University of Connecticut where he is a Fellow of the Academy of Distinguished Engineers and his MS Degree in Structural Engineering from Lehigh University. He also received an honorary Sc.D degree from Clarkson University and an honorary MS degree from the Politecnico di Milano. In 2021, he was elected to the prestigious National Academy of Engineering (NAE) in the United States and in 2025 was also election to the National Academy of Construction (NAC). His career has focused on developing innovative structural engineering solutions for over 100 major building projects around the world, including some of the world's tallest. Mark holds 16 U.S. and international patents for high-performance seismic structural mechanisms and environmentally responsible structural systems. He teaches studio design courses at Stanford University, UC Berkeley, Cal Poly, California College of the Arts, North Carolina State University, Northeastern University, and the Pratt Institute and has the written the book entitled "Designing Tall Buildings – Structure as Architecture" with the third edition to be released by Routledge - Taylor & Francis in Spring of 2026.



Daniel BICHARA – Northpark

Daniel Bichara is the founder and CEO of Northpark AI. The activity of the company is devoted to Generative Artificial Intelligence, which is rapidly transforming design disciplines, yet its application in structural engineering remains largely exploratory. This paper proposes a practical framework for integrating generative AI into structural engineering workflows, bridging computational creativity with engineering rigor. The framework combines data-driven generative models, parametric modeling, and performance-based validation to support concept development, structural optimization, and decision-making.

Rather than replacing established analytical methods, generative AI is positioned as an augmented design tool capable of exploring large solution spaces, identifying efficient structural configurations, and accelerating iterative processes. The proposed approach emphasizes reliability, transparency, and integration with conventional verification procedures. Through applied examples, the study demonstrates how generative AI can enhance efficiency, innovation, and sustainability in structural engineering practice while maintaining technical robustness and safety standards.

