

# ARTIFICIAL INTELLIGENCE

## PNRR - Generative deep learning and evolutionary machine learning for innovative structural engineering applications

<b>Funded By</b>	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
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<b>Context of the research activity</b>	Innovative machine learning-based applications for structural engineering-related fields. Progetto finanziato nell'ambito del PNRR. PNRR M4C2, Investimento 1.3 - Avviso n. 341 del 15/03/2022 - PE0000013 Future Artificial Intelligence Research (FAIR) - CUP E13C22001800001.
<b>Objectives</b>	Machine learning applications for structural engineering fields, thus involving structural design, control and monitoring, decision-making, and earthquake engineering among others. Special attention is dedicated to generative deep learning, especially based on the neural transformer models, generative adversarial networks, variational autoencoders, and deep reinforcement learning. Data fusion aspects may be addressed for heterogeneous sources of information, and also dealing with uncertain data.
<b>Skills and competencies for the development of the activity</b>	Candidate should be curious and motivated in this interdisciplinary AI-based field for future smart structures and infrastructures. Basic knowledge of civil and structural engineering, probability and statistics, data analysis, and programming skills in different environments (Python, Matlab) are advisable and should be appreciated. In any case, these prerequisites are not strictly needed because these competencies will be structured, expanded, and consolidated during the current Ph.D. programme.