



Università degli Studi di Ferrara

SEMINAR

JULY 11th, 2019 - 10:30 a.m.

DEPARTMENT OF ARCHITECTURE

Via Quartieri 8, 44121 Ferrara

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Lecture. Integrative methods for diagnostics of historic structures

Before plans can be laid out for preservation or adaptive reuse of historic structures, an understanding of how existing damages came to be as well as how they affect the current health of a structure need to be fully understood. To do this, it is common to extract data from the built environment using laser scanning, non-destructive evaluation, physics-based modeling, and monitoring among other methods. The results of each of these methods can be further mined until a comprehensive picture of the structure can be developed. While these large, heterogenous datasets are powerful assets, often they are not properly integrated during the diagnostic process and thus not used to their full potential. The purpose of this talk is to show novel methods for synthesizing these datasets using hybrid analytics. Hybrid analytics combines the interpretability, and robust foundations of physics-based modeling with the computational efficiency and pattern-recognition capabilities of data-driven, machine learning algorithms. Essentially, it takes large, noisy data sets and figures out what aspects of the structure tell most of its “story.” By understanding how the building and its environment operate together as a system, more optimized monitoring and intervention plans can be laid out. Applications of these methods to historic case studies such as the foundations of the Baptistery di San Giovanni and a wall in the Room of the Elements in Palazzo Vecchio will be discussed.

Ferrara, May 7th, 2019

Prof. Vincenzo Mallardo

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