Avviso Seminario

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3D Concrete Printing in Construction: Basic Principles and Current Challenges

Abstract

This seminar provides an in-depth technical analysis of 3D Concrete Printing (3DCP) as an emergent disruptive technology in the construction sector. It articulates the foundational principles that are fundamental for the 3DCP, including additive manufacturing processes that enable the layer-by-layer construction of structural elements, obviating the need for conventional molding or formwork. The talk is based on an overview of the mechanisms of 3DCP, detailing the operational parameters of print path generation, extrusion methodologies, and the rheological properties of concrete suitable for 3D printing. The session progresses to examine case studies demonstrating the application of 3DCP in creating geometrically complex structures, highlighting its potential to revolutionize architectural and structural design. Central to the seminar is the exploration of prevailing challenges in 3DCP. Critical issues such as the mechanical characterization of printed materials, the optimization of interlayer adhesion, and the development of reliable structural performance metrics are discussed. The absence of universally accepted building codes for 3DCP and the difficulties in scaling laboratory prototypes to structural applications are also addressed. The seminar further addresses the complications associated with the integration of traditional reinforcement within 3DCP frameworks and the quest for alternative reinforcing strategies. It concludes with an assessment of the current research gaps and the advancements needed to foster the maturation of 3DCP into a mainstream construction methodology.

Mercoledì 6 Dicembre 2023, ore 10:30,
Aula Conferenze, via Vito Volterra 62, Palazzina B,
Dipartimento di Ingegneria Civile, Informatica e delle Tecnologie Aeronautiche,
Università di Roma Tre
On line su Microsoft Teams al seguente link: https://shorturl.at/tuG17