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Smart Structures; as Interactive Skeletons in Architecture

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Statement

This Thesis is submitted to Ain Shams University – Faculty of Engineering – Department of Architecture for the degree of M.Sc. in Architecture.

The work included in this thesis was carried out by the author in the Department of architecture- Faculty of Engineering – Ain Shams University, from October 2006 to February 2011.

No part of this thesis has been submitted for a degree or a qualification at any other university or institution.

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Abstract

The end of the twentieth century was witness to the merger of several technological disciplines that could eventually revolutionize engineering design philosophy and lead to the creation of intelligence within otherwise inanimate structures.

This new technology will endow a structure with sense and the ability to react to its environment and change its state. The consequences of this paradigm shift for engineered objects are likely to be profound, and we have as much chance of perceiving the future impact of this technology.

Architecture becomes animated and unpredictable. New emerging technologies are the basics for tomorrow's achievement .The structure is no longer the load it is carrying, but rather it is the direction it is talking.

Reaching the digital age, and its technological advances, announces the profound shift for architecture and the architects' visions in particular, especially what concerns the architectural smart structures interactivity features.

More over, the invasion of the materials advances as a basic in smart structure is capable of more than just being tool for the architectural practice, but also extends to reach out for assisting the architect to announce and express his new, even futuristic, visions and concepts about transforming structure shape.

This thesis is an attempt to conceive the architectural structure, at different and mainly new ways, <u>not just as a static structure but also as an interactive structure in our environment.</u> The overall aim of this research is to achieve an understanding of this new technology of smart structure,

The research outcome is not a classification rule, but an elaborating proposition , derived from the analysis of the gained knowledge , highlighting the constant of **smart Structures** and the near futuristic visions for the architectural products, opening new horizons for further research works,

Keywords: *smart structure, adaptive ness, responsiveness, interactive Architecture, intelligent structure, flexible structures, mobility, dynamic structures and future visions*

To My Lovely Father
To My Mother
To My Brother
To My Lovely Husband

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