

Parametric design of Built Structures – State of the Art

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Abstract

The potential of parametric digital tools based on the Rhino-Grasshopper, Dynamo-Revit platforms has been successfully investigated by several researchers in various fields of engineering and design.

According to the results of pilot projects, the technology is ready for exploitation in a commercial environment, having been proven at a small scale. The key academic challenge will be scaling it up for use in complex architectural projects and products, as there are some risks related to the level of accuracy and reliability that need to be addressed and mitigated.

This paper presents a review of the various existing approaches, techniques and developments in the parametric design of Architectural structures in various stages of the design process both as a tool for internal design as well as an end user interface tool. The objective of this paper is to review the software that specifically facilitate different stages such as site analysis, form finding, FEM analysis, cutting patterns and detailing in the design process of tensile membrane structures to provide a comparative analysis of the state of the art in the field as well as to establish a benchmark for further development of design tools.