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FORM FINDING OF ARCHITECTURAL ARTIFACTS USING GENETIC ALGORITHMS. A NOVEL APPROACH OF HANDLING PARAMETRIC OBJECS AS DESIGN VARIABLES

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Abstract. *This work aims to contribute on the form finding techniques of generative space artifacts, considering objects of parametric design as programming objects, and in particular design variables –due to parametric approach- of a form finding procedure. The objective functions of the optimization process are either performance or architectural beauty criteria. The performance criteria [1] are divided into two main categories: structural (force density, stresses, displacements, etc.) and bioclimatic (volume to surface, u- value etc.). The architectural criteria are either geometric ones (analogies, symmetry, golden ratio) or nature inspired (voronoi, inversed catenary) [2]. However, in certain cases, an optimal design in terms of performance is furthermore significant considering architectural aspects of design [3]. The proposed methodology, aims to strengthen the architectural inspiration using genetic algorithms and parametric, object oriented design, in an integrated manner, without limiting nonetheless emerging the conceptual volume synthesis.*

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