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Paper: **A SHAPE GRAMMAR MODEL TO GENERATE ISLAMIC GEOMETRIC PATTERN**

Topic: Architecture

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References:
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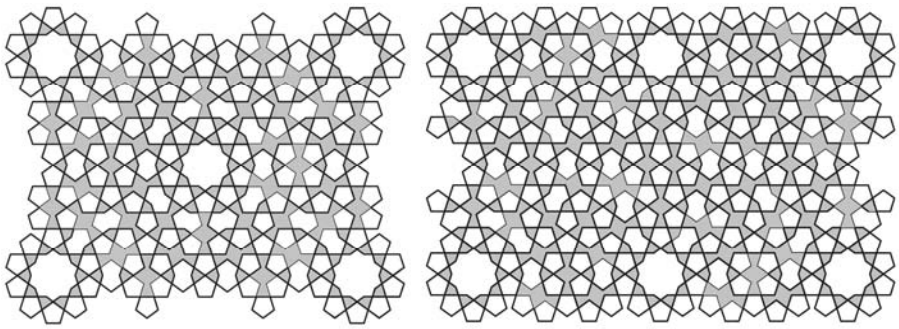
Abstract:
Geometric patterns are the important ornaments of Islamic art and architecture. Polygons and poly-pointed star patterns, especially the 6-, 8-, 10- and 12-sided polygons were used in Islamic art and architecture mostly and created many various geometrical compositions on the surfaces. The 10 sided polygon, decagon, is a special shape in Islamic geometry. This study is evaluating the special features of decagons in Islamic art analyzing the Penrose tiling, aiming generation of new patterns that have the similar characteristics of the geometric patterns in Islam with help of a shape grammar model. In this context, it is given two design templates developed for new generated patterns.
In this paper, the combinations of the bowtie and the elongated hexagon, which are the sub shapes of decagon, are mentioned and generated to make possible to cover a rectangle surface. Two bowtie-elongated hexagon templates that help to generate new forms related to Islamic geometrical patterns and many results of the generation from the two templates are given in the framework of this study.
The aim of this paper is to show that different final products can be formed from the shapes, which have the same design language and same initial shape applying the same rule schema. It is clarified that a design can be handled in a wider perspective in the context of shape grammars and reproduced by new designs with same genetic features.
The future goal of this research is to apply this shape grammar model and the design templates into the computer to get the results easier and faster.



Images of the generated Islamic Geometrical Patterns

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