

**PARAMTRIC VISUAL PROGRAMING AID  
FOR MORE RESPONSIVE URBAN MORPHOLOGY**

BY  
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A thesis submitted in partial fulfillment of the requirements for his degree of

**Doctor of Philosophy**  
In  
**(Architectural Design)**

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**FAYOUM UNIVERSITY**

**2022**

## **Parametric visual programming aid for more responsive urban morphology**

**Abstract:** Studying the effectiveness of natural lighting in the initial design stages contributes to improving the performance of the interior space and thus the activity and health of the user of the space while reducing the consumption of artificial lighting and air conditioning energy, which achieves the maximum benefit into the space. This study presents the effect of using parametric design tools, genetic algorithms and programs to simulate daylight in the initial design stages. It aims primarily to evaluate and improve the performance of a building facade consisting of a complex engineering network. The main objective is to evaluate the facade, its design effectiveness and its response to dynamic daylight. The outer Envelope improves daylight diffraction, maintaining a desirable luminous interior environment. In the experiment, the shelves are moved according to certain parameters where each shelf has the same angle of inclination, with a separate control. This allows the designer to run many iterations during the design phase and choose the best possible based on pre-defined criteria by integrating the genetic algorithm into the model to reach the optimal configuration of the external facade (cover) in the Specific times or in several different environmental conditions. Under certain criteria and conditions. For example, the required lighting levels for users.

**Keywords:** Dynamic shelves, Parametric modeling tools, Daylighting, Genetic Algorithms.