International Conference on Civil Engineering, Architecture and Urban Management in Iran
Tehran University
August-2018

The Fractal Approach in Evaluation of the Complexity of Street Skyline

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Abstract

The complexity is an important aspect of the visual quality that affects people's visual perception. In recent years, the fractal approach has been used to measure the level of environmental complexity. In this study, it is aimed to obtain the physical features of the street that affect the street skyline's complexity through fractal approach. For this, a total of 42 images of street vista were selected from the London and Chicago cities. Subsequently, the physical features that affect fractal dimension of street skyline were identified and measured through developed measurement methods in the scope of the study. Then, the skylines of the street images were determined and the fractal dimensions of the street skylines were calculated. The relationship between the physical features and the fractal dimensions was examined by correlation analysis. As a result, the physical features of streets that affect the skyline's fractal dimension, respectively, the enclosure ratio of street, the number of peak points on the building roofs, the intersection of landscape and furniture elements with skyline and the number of buildings with different heights were identified as important. Findings showed that the fractal approach can be used to reveal the factors that influence the complexity of the space.

Key words: Visual quality, Complexity, Fractal approach, Street skyline

1. Introduction

The city is assessed by the perception of the environmental features defined by the person. Therefore, urban design principles have to be able to improve the interaction between the person and his environment [1, 2, 3]. Visual resources are a major component of the quality of life and the visual quality of the environment is associated with how people perceive and evaluate the environment. As users perceive an environment, their primary sensory interaction with that environment is visual in nature [4]. The most frequent studies define the concept of complexity as an important component of visual quality that affect human perception [5, …, 11]. Visual richness of an environment is defined as complexity. The number and type of buildings, architectural details, elements of landscape and furniture elements etc. influence the visual complexity of the