A Study on the Correlation Analysis between the Pre-Sale Competition Rate and the Apartment Unit Plan Factor through Machine Learning

Authors : Seongjun Kim, Jinwooung Kim, Sung-Ah Kim

Abstract : The development of information and communication technology also affects human cognition and thinking, especially in the field of design, new techniques are being tried. In architecture, new design methodologies such as machine learning or data-driven design are being applied. In particular, these methodologies are used in analyzing the factors related to the value of real estate or analyzing the feasibility in the early planning stage of the apartment housing. However, since the value of apartment buildings is often determined by external factors such as location and traffic conditions, rather than the interior elements of buildings, data is rarely used in the design process. Therefore, although the technical conditions are provided, the internal elements of the apartment are difficult to apply the data-driven design in the design process of the apartment. As a result, the designers of apartment housing were forced to rely on designer experience or modular design alternatives rather than data-driven design at the design stage, resulting in a uniform arrangement of space in the apartment house. The purpose of this study is to propose a methodology to support the designers to design the apartment unit plan with high consumer preference by deriving the correlation and importance of the floor plan elements of the apartment preferred by the consumers through the machine learning and reflecting this information from the early design process. The data on the pre-sale competition rate and the elements of the floor plan are collected as data, and the correlation between pre-sale competition rate and independent variables is analyzed through machine learning. This analytical model can be used to review the apartment unit plan produced by the designer and to assist the designer. Therefore, it is possible to make a floor plan of apartment housing with high preference because it is possible to feedback apartment unit plan by using trained model when it is used in floor plan design of apartment housing.

Keywords : apartment unit plan, data-driven design, design methodology, machine learning

Conference Title : ICADM 2017 : International Conference on Architectural Design and Methodologies

Conference Location : Bangkok, Thailand

Conference Dates : November 29-30, 2017