

Fuzzy Logic Modeling of Evaluation the Urban Skylines by the Entropy Approach

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Abstract : When evaluating the aesthetics of cities, an analysis of the urban form development depending on design properties with a variety of factors is performed together with a study of the effects of this appearance on human beings. Different methods are used while making an aesthetical evaluation related to a city. Entropy, in its preliminary meaning, is the mathematical representation of thermodynamic results. Measuring the entropy is related to the distribution of positional figures of a message or information from the probabilities standpoint. In this study, analysis of evaluation the urban skylines by the entropy approach was modelled with Rule-Based Mamdani-Type Fuzzy (RBMTF) modelling technique. Input-output parameters were described by RBMTF if-then rules. Numerical parameters of input and output variables were fuzzificated as linguistic variables: Very Very Low (L1), Very Low (L2), Low (L3), Negative Medium (L4), Medium (L5), Positive Medium (L6), High (L7), Very High (L8) and Very Very High (L9) linguistic classes. The comparison between application data and RBMTF is done by using absolute fraction of variance (R2). The actual values and RBMTF results indicated that RBMTF can be successfully used for the analysis of evaluation the urban skylines by the entropy approach. As a result, RBMTF model has shown satisfying relation with experimental results, which suggests an alternative method to evaluation of the urban skylines by the entropy approach.

Keywords : urban skylines, entropy, rule-based Mamdani type, fuzzy logic

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