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TOWARDS UNDERSTANDING URBAN PATTERNS AND STRUCTURES

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Abstract. Intelligent urban design is a set of principles for desirable future urban structures. Existing urban structures can be analysed using remotely sensed images. In order to foster this analysis both in speed and objectivity automation is proposed in this work. Automatic Gestalt perception is distinguished from automatic knowledge-based analysis. Both will be required. For the Gestalt side an algebraic approach is utilized. This Gestalt algebra operates on a 6-D domain containing position, orientation, frequency, scale and assessment. It defines how to form aggregates from parts. Any Gestalt can be combined with arbitrary others, but good assessments are only achieved, if the parts are mutually in Gestalt-arrangements. There are operations for mirror-symmetry, good continuation in rows and rotational-symmetry. In this paper experiments are made only with mirror-symmetry and row-continuation. Example images of Thimphu, Bhutan and Phoenix, Arizona are obtained by use of Google Earth. The results are to a large degree in accordance with human perceptual grouping. Some illusory groupings not in accordance with human perception, as well as examples salient to humans which are not instantiated by the system, are discussed as well.

[Conference Paper](#) (PDF, 1385 KB)

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