

DESCRIBING BUILDINGS BY 3-DIMENSIONAL DETAILS FOUND IN AERIAL PHOTOGRAPHY

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ABSTRACT:

A description of Real Properties is of interest in connection with Location-Based Services and urban resource management. The advent of Internet-maps and location aware Web-search inspires the development of such descriptions to be developed automatically and at very little incremental cost from aerial photography and its associated data products. Very important on each real property are its buildings. We describe how one can recognize and reconstruct buildings in 3 dimensions with the purpose of extracting the building size, its footprint, the number of floors, the roof shapes, the number of windows, the existence or absence of balconies. A key to success in this task is the availability of aerial photography at a greater overlap than has been customary in traditional photogrammetry, as well as a Ground Sampling Distance GSD exceeding the traditional values. We use images at a pixel size of 10 cm and with an overlap of 80% in the direction of flight and 60% across the flight direction. Such data support a robust determination of the number of floors and windows. Initial tests with data from the core of the City of Graz (Austria) produced an accuracy of 90% regarding the count of the number of floors and an accuracy of 87% regarding the detection of windows.

TOPIC: Image processing and pattern recognition

ALTERNATIVE TOPIC: Image processing and pattern recognition