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Quality evaluation of 3D city building Models with automatic error diagnosis

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Abstract. Automatic building modelling allows a cost effective access to 3D semantic information of cities. However, even state-of-the-art algorithms have intrinsic limits and many errors exist in 3D reconstructions, requiring expensive manual corrections. A new approach is proposed in this paper for the automatic diagnosis of 3D building databases in urban areas. A novel error taxonomy which allows a subsequent high-level diagnosis is first proposed. Then, relevant raster and vector features are extracted from very high resolution multi-view images and Digital Surface Models so as that to retrieve such errors. In a supervised way, a set of functions is presented in order to take high-level decisions from these low-level features. Experiments on 355 buildings in an European dense city center with 10 cm airborne images demonstrate the high accuracy on error detection and show promising results.

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