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AREAL FEATURE MATCHING BASED ON SIMILARITY USING CRITIC METHOD

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Abstract. In this paper, we propose an areal feature matching method that can be applied for many-to-many matching, which involves matching a simple entity with an aggregate of several polygons or two aggregates of several polygons with fewer user intervention. To this end, an affine transformation is applied to two datasets by using polygon pairs for which the building name is the same. Then, two datasets are overlaid with intersected polygon pairs that are selected as candidate matching pairs. If many polygons intersect at this time, we calculate the inclusion function between such polygons. When the value is more than 0.4, many of the polygons are aggregated as single polygons by using a convex hull. Finally, the shape similarity is calculated between the candidate pairs according to the linear sum of the weights computed in CRITIC method and the position similarity, shape ratio similarity, and overlap similarity. The candidate pairs for which the value of the shape similarity is more than 0.7 are determined as matching pairs. We applied the method to two geospatial datasets: the digital topographic map and the KAIS map in South Korea. As a result, the visual evaluation showed two polygons that had been well detected by using the proposed method. The statistical evaluation indicates that the proposed method is accurate when using our test dataset with a high F-measure of 0.91.

Conference paper (PDF, 1014 KB)

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