

Hierarchical detection of rectangles in images

Mohamed Abolella Abdellatif Gaber ,Mohamed Hassan and Noburo Babaguchi

Abstract

This paper proposes a new technique for rectangle detection in images based on hierarchical feature complexity. The algorithm follows a bottom-up/top-down approach: in the bottom-up phase, contour curves are extracted and its edges are fit to straight lines. Long contours may grow away from the object boundary and they may not complete a loop due to missing edges. The proposed algorithm introduces a solution to such problems in the top-down phase through two simple rules. First, contours are split into segments at the point where non-convexity occurs since this is the point where long contours depart from the object boundary. Second, the split segments are classified into six classes according to their probability of being a rectangle depending on the numbers of the segment sides and right angles they enclose. These classes are then completed into rectangles by searching for suitable lines that may have been missed during the bottom-up phase. The method is verified through experiments on a set of images covering several applications. The results are compared to state of the art methods and benchmarked to groundtruth.

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