

# **Disparity Map Computation from Stereo Images Using Hill-Climbing Segmentation**

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Stereo matching is one of the most active research areas in computer vision for decades. The task of stereo matching is to find the point correspondence between two images of the same scene taken from different viewpoints. This paper presents a segment-based stereo matching algorithm. Firstly, the reference image is segmented using hill-climbing algorithm and local stereo matching is performed Scale Invariant Feature Transform (SIFT) feature points with Sum of Absolute Differences (SAD) block matching. Secondly, a set of reliable pixels is constructed by comparing the matching cost and the mutual cross-checking consistent between the left and right initial disparity maps, which can lead to an actual disparity plane. Thirdly, a set of all possible disparity planes are extracted and then plane fitting and neighboring segment merging are performed. Finally, the disparity planes are set in each region using graph cuts to obtain final disparity map. The evaluation of proposed algorithm on the Middlebury data set result shows that the proposed algorithm is competitive with state-of-the-art stereo matching algorithms.