

## **Stereo matching algorithm by hill-climbing segmentation**

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Stereo matching is important in the area of computer vision and photogrammetry. We present a stereo matching algorithm to refine depth map by using stereo image pair. The reference image is segmented by using hill-climbing algorithm and Scale Invariant Feature Transform (SIFT) feature descriptor with Sum of Absolute Difference (SAD) local stereo matching is performed. Next, we extract a set of disparity planes and then Random Sample Consensus (RANSAC) plane fitting and neighboring segment merging are performed. Finally, the disparity map is improved by using graph cuts energy minimization on smoothness constraints between neighboring segments. We evaluate the proposed approach on Middlebury stereo test set and experimental result shows that the proposed algorithm is comparable with state-of-the-art stereo matching algorithms.