

Color Image Guided Boundary-inconsistent Region Refinement for Stereo Matching

Abstract

Cost computation, cost aggregation, disparity optimization and disparity refinement are the four main steps for stereo matching. While the first three steps have been widely investigated, few efforts have been taken on disparity refinement. In this letter, we propose a color image guided disparity refinement method to further remove the boundary-inconsistent regions on disparity map. First, the origins of boundary-inconsistent regions are analyzed. Then, these regions are detected with the proposed hybrid-superpixel based strategy. Finally, the detected boundaryinconsistent regions are refined by a modified weighted median filtering method. Experimental results on various stereo matching conditions validate the effectiveness of the proposed method. Furthermore, depth maps obtained by active depth acquisition devices like Kinect can also be well refined with our proposed method.

Index Terms—Disparity refinement, stereo matching, boundary, Kinect.

