

Abstract: Spatio-temporal Stereo Matching under Temporal Disparity Variation

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Abstract

When computing a depth map sequence of a stereo image sequence, the temporal consistency of computed depth maps is a very important factor along with the accuracy. In this paper, we propose a new similarity measure for spatio-temporal stereo matching aiming at producing temporally consistent depth maps from a stereo image sequence. To enforce the temporal consistency in a spatio-temporal similarity measure, we assign adaptive support weights to pixels in a spatio-temporal window and define the four-dimensional support region in consideration of the motion and depth variation along the time. In addition, we model the support weight to be less sensitive to illumination variation. The similarity is computed simply by comparing two support regions with computed support weights. The proposed similarity measure truly improves the performance of spatio-temporal stereo matching both in the accuracy and in the consistency aspects.

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