Abstract

Most of the existing stereo matching algorithms assume that the corresponding pixels have the same intensity (color) in both images. But in real world situations, image color values are often affected by various radiometric factors such as illumination direction, illuminant color, and imaging device changes. Hence, we cannot fully depend on the raw color recorded by a camera. So, the assumption of color consistency does not hold well for stereo images in real scenes. Thus, the performance of most conventional stereo matching algorithms would be severely degraded under radiometric variations. The main focus of this work is on illumination invariant stereo matching by generating illumination invariant images from stereo image data
Real Time Stereo Matching for Radiometric Changes

using a non-iterative normalisation in log RGB space. The actual stereo matching is done using the similarity measure, Normalized Cross-Correlation (NCC) which is the standard statistical method for determining similarity which itself is invariant to linear brightness and contrast variations. In this work we propose a novel method for error analysis by dividing disparity into uniform and discontinuity regions. The proposed algorithm was evaluated using standard datasets and the results are comparable to state-of-art techniques in the literature.

Refer ences

- Middlebury Stereo Vision Page: http://vision.middlebury.edu/stereo


Index Terms

Computer Science   Hpc Applications
Real Time Stereo Matching for Radiometric Changes

Keywords
Disparity Map Stereo Correspondence Invariant Images Radiometric Variations
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