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.
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.

References

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

Index Terms

Computer Science

Hpc Applications
Keywords

Disparity Map  Stereo Correspondence  Invariant Images  Radiometric Variations
Illumination Invariant

Color Normalisation.