

Merging Static and Dynamic Depth Cues with Optical-Flow Recovery for Creating Stereo Videos

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Abstract

In this paper, a method for estimating the depth information of a general monocular image sequence and then creating a 3D stereo video is proposed. Distinguishing between foreground and background is possible without additional information and then foreground pixels are moved to create the binocular image. The proposed depth estimation method is based on coarse-to-fine strategy. By applying the CID method in the spatial domain, the sharpness and the contrast of an image can be improved by the distance of the region based on its color. Then a coarse depth map of the image can be generated. An optical flow method based on temporal information is then used to search and compare the block motion status between previous and current frame, and then the distance of the block can be estimated according to the amount of block motion. Finally, the static and motion depth information are integrated to create the fine depth map. By shifting foreground pixels based on the depth information, a binocular image pair can be created. A sense of 3D stereo can be obtained without glasses by an auto-stereoscopic 3D display.

Keyword : Depth map, Computed Image Depth, Optical flow, Object segmentation, Binocular image