

Removing Specularities from Image Sequences based on Spatio-Temporal Frameworks

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We propose a method, which removes specularities from image sequences taken by a video camera in uniform straightly-line motion. Specular components, especially strong highlights, raise some problems in object recognition. Based on spatio-temporal volume analysis, we are able to detect specular components and reconstruct original texture on the body as diffuse components. The motions of specularities in spatio-temporal volumes are so unique that specularities can be distinguished from ordinary texture. Intersecting a spatio-temporal volume derives two significant images: EPIs(Epipola Plane Images) and PVI(Panoramic View Images). We analyzed these images to construct specular-free images. Some experiments have been conducted using our methods, and the results show the effectiveness the method to remove specularities from image sequences. Moreover, even if texture on a body is hidden by strong highlights, this method recovers the original texture.

Publication

1. A. Banno and K. Ikeuchi, "Removing specularities of vehicles from image sequences by using spatio-temporal images taken by a moving camera", IPSJ Transactions on Computer Vision and Image Media, 2003-CVIM-141, pp.17-23, Nov., 2003.
2. A. Banno and K. Ikeuchi, "Removing specularities of vehicles from image sequences by using spatio-temporal images", Proceedings of 2nd ITS Symposium2003, pp.423-428, Nov., 2003.
3. A. Banno and K. Ikeuchi, "Removing specular components of image sequences based on EPI analysis", MIRU 2004 to be appear, Jul., 2004.

