WACV2012
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USA

Reviews For Paper

Paper ID	127
Title	Improving Realism of 3D Texture using Component Based Modeling

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Masked Reviewer ID: Assigned_Reviewer_1

Review:

Question	
Overall Rating	Accept
Detailed Comments to Authors (Justify your rating).	This work presents a new method to estimate 3D textures by building from the work on Polynomial Texture Maps(PTM). This is done by first segmenting results from direct and global illumination. Separate parametric functions are then developed to model direct illumination, including cast shadows and specularities, and global illumination. Importance: Accurate acquisition, modeling, and rendering of complex materials is certainly an important area of research in computer vision. Technical comments: The description of the methods are complete. The experimental analysis compares against the PTM method, however, the capture methods a quite different. Considering that the presented method requires additional complexity (for separating direct/global illumination), how is the capture time increased using the presented method over Malzbender et al.'s capture device? Presentation: The footnote on page 6 says to view the softcopy for additional details in the images, but I am still finding it difficult to compare at 300% zoom in the PDF. Would it be possible to increase the image sizes on the page? Also, it may serve the point better to show the image differences (or possibly a log of the difference). From looking at the results, I would expect the nearly black images from the presented method while the PTM results would have numerous areas of error due to the poor modeling of high-frequency components. -Figure 2: there is a lot of wasted whitespace in this fig… reformat it if space is an issue. -Equation 7: separate "nexp"… it is difficult to read. -Figure 6: "region of dense shadow" -> "regions of dense shadow" -Section 2.2: "using appropriate function." -> "using an appropriate function." "with change in lighting direction." -> "with a change in lighting direction."

Masked Reviewer ID: Assigned_Reviewer_4

Review:

Question	

Overall Rating	Accept
Detailed Comments to Authors (Justify your rating).	This paper proposes a component based modeling algorithm to model the BRDF of 3D textures. The major idea is to separately model the direct and global component in the 3D textures instead of modeling them together in a single model such as PTM. The paper also proposed method to classify shadows and specular component, and model the two component separately. Experimental results show that their model is better in preserving the shadows and specular high light comparing to the results from PTM. Overall, this is a solid paper and I suggest an acceptance to this paper.

Masked Reviewer ID: Assigned_Reviewer_5

Review:

Question	
Overall Rating	Accept
Detailed Comments to Authors (Justify your rating).	Summary : The paper presents a method for creating 3D textures from a given set of images taken under different lighting directions, which can then be used for relighting under an arbitrary lighting condition. The key feature of the paper is the decomposition of the lighting effect to global and directional, and further modelling the directional lighting to shadow and specular components. Pros : The paper presents an interesting yet novel (to my knowledge) approach for the 3D texture problem. The algorithm presented seems technically correct and convincing, as backed up by the experimental results. Overall writing is ok, although I have a several suggestions on the presentation of the paper (see below). Suggestions : - Although the paper is relatively easy to read in general, the details in the technical section are not very clear and could definitely improve. The details can be confusing due to the lack of function arguments - see eq. 1 and 2. What is the domain of the function L? Should be clear to make the paper read better, e.g. L(x,p0). The authors should also make it clear that the L they compute in the paper is per pixel. - Similarly, Eq. 3 and it's description is not very clear. A figure that explains this would be nice. - Eq.4-5 , What is (5) for here? What are y's, a's, and b's? No description is given which makes it difficult for the reader to grasp the idea quickly. - Eq. 7, exp -> e - It may be a better flow if the authors put section 3 before section 2. - Fig. 10, what's the domain of y axis? why do you need two figures for this, rather than just one figure? Overall, although the presentation could be better, I think the paper should be interesting to the WACV crowd.