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Literature Review

HDR image reconstruction from a single exposure using deep CNNs

In this paper, they propose a novel method for reconstructing HDR images from low dynamic range (LDR) input images, by estimating missing information in bright image parts, such as highlights, lost due to saturation of the camera sensor. HDR image reconstruction from a single exposure using deep. In this paper, they address the problem of predicting information that have been lost in saturated image areas, to enable HDR reconstruction from a single exposure. HDR image reconstruction from a single exposure using deep CNNs. The encoder and decoder work in different domains of pixel values, and they design them to optimally account for this. Although the they can deliver an impression of increased dynamic range by boosting highlights, when inspecting the saturated image regions little information have been reconstructed. Although they only consider the problem of reconstructing saturated image regions, they argue that this is the far most important part when transforming LDR images to HDR, and that it can be used to cover a wide range of situations. The exposure of the input LDR image in the bottom left has been reduced by 3 stops, revealing loss of information in saturated image regions. This is accomplished using a loss function that compares the output of the network to the log of the ground truth HDR image, as explained in Section 3.4. For the image up sampling, they use deconvolutional layers with a spatial resolution of 4×4 initialized to perform bilinear up sampling. These are examples of local methods that apply different processing in saturated areas in order to boost the dynamic range of an LDR image. They demonstrate that their approach can reconstruct high-resolution visually convincing HDR results in a wide range of situations, and that it generalizes well to reconstruction of images captured with arbitrary and low-end cameras that use unknown camera response functions and post-processing.

Transferring Image-based Edits for Multi-Channel Compositing

In this paper, the user applies 2D image-based edits to specified channels such as: blurring the background object to create depth of field effect (All Photometric channels); adjusting gamma, hue, and saturation to emphasize floor reflections (Reflection channel); Making the eye sockets of foreground skulls appear to glow blue by adjusting the hue, saturation, and lightness (Diffuse and Global Illume channels). Starting from an input source view of a rendered 3D scene, along with corresponding augmented render channels, the user may make a number of 2D edits. A common way to generate high-quality product images is to start with a physically-based render of a 3D scene, apply image-based edits on individual render channels, and then composite the edited channels together (in some cases, on top of a background photograph). They present a transfer algorithm that extends the image analogies formulation to include an augmented set of photometric and non-photometric guidance channels and, more importantly, adaptively estimate weights for the various candidate channels in a way that matches the characteristics of each individual edit. The user then makes a parametric adjustment within the region mask to the selected channels to obtain an edited source view. This transfer problem is challenging since many edits may be visually plausible but non-physical, with a successful transfer dependent on an unknown set of scene attributes that may include both photometric and non-photometric features. Unfortunately, such edits cannot be easily reused for global variations of the original scene, such as a rigid-body transformation of the 3D objects or a modified viewpoint, which discourages iterative refinement of both global scene changes and image-based edits. (Top) Input source view rendered using a set of photometric render channels. Their method then automatically determines a region mask and a selection of one or more relevant photometric render channels for the edit. The problem of transferring edits is challenging as on the one hand they often involve multiple channels, while on the other hand adding too many channels can easily result in corrupted transfers. They propose a method to automatically transfer such user edits across variations of object geometry, illumination, and viewpoint. Their system automatically transfers the user edits from the source view to the target view.

1)@article{eilertsen_kronander_denes_mantiuk_unger_2017,
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2)@article{Hennessey:SIGA:2017,
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