

Prompt-Guided Image-Adaptive Neural Implicit Lookup Tables for Interpretable Image Enhancement

Anonymous Authors

1 COMPARISON OF NETWORK PARAMETERS

Table 1 presents a comparison of the number of network parameters. Our method has a slightly higher number of parameters compared to other predefined filter-based methods due to the inclusion of an MLP in our IA-NILUT. However, our method uses fewer parameters than 3DLUTs and AdaInt, which utilize multiple LUTs containing more parameters than our MLP.

2 ABLATION STUDY ABOUT SORTED RGB VALUES

In the IA-NILUT, we use the sorted RGB values as described in Eq. (3) of the main paper. To demonstrate the effectiveness of the sorted RGB values, we present the filter effects when the sorted RGB values are not used in Figure 1. The color temperature filter is expected to only affect color; however, without the sorted RGB values, it also impacts contrast. This result highlights the importance of the sorted RGB values for each filter to achieve the desired effects.

3 ADDITIONAL VISUALIZATIONS OF FILTER EFFECTS

We present additional visualizations of filter effects in Figures 2 and 3, where each filter produces a specific effect associated with the corresponding guiding prompts. We show further examples of sequentially applying predicted parameters in Figures 4 and 5. The enhancement process can be visualized in a way that is easy for humans to understand.

Table 1: Comparison of network parameters.

Method	#Network parameters
3DLUTs [37]	593.5 K
AdaInt [35]	619.7 K
CLUTNet [39]	278.7 K
D&R’s filters [24]	248.6 K
Exposure’s filters [11]	266.0 K
UIE’s filters [15]	250.6 K
RSFNet’s filters [23]	250.6 K
PG-IA-NILUT (ours)	449.3 K

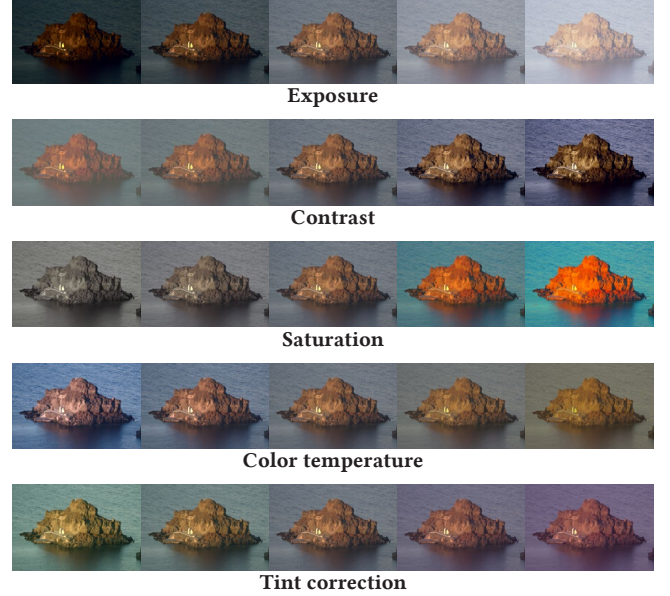


Figure 1: Filter effects of the IA-NILUT without the sorted RGB values.



Exposure



Contrast



Saturation



Color temperature



Tint correction



Exposure



Contrast



Saturation



Color temperature



Tint correction



Exposure



Contrast



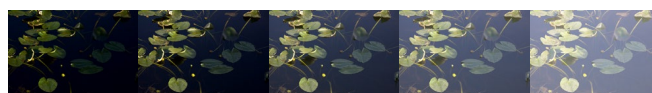
Saturation



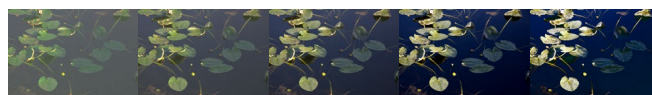
Color temperature



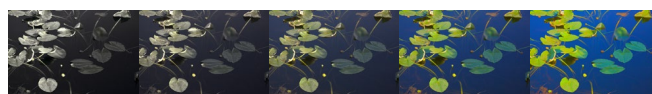
Tint correction



Exposure



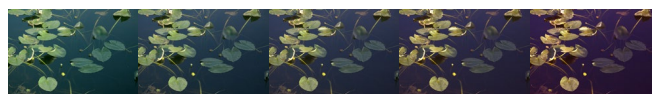
Contrast



Saturation



Color temperature



Tint correction

Figure 2: Visualization of learned filter effects. Only certain parameters are varied while others are held constant at 0. The images are samples from FiveK.

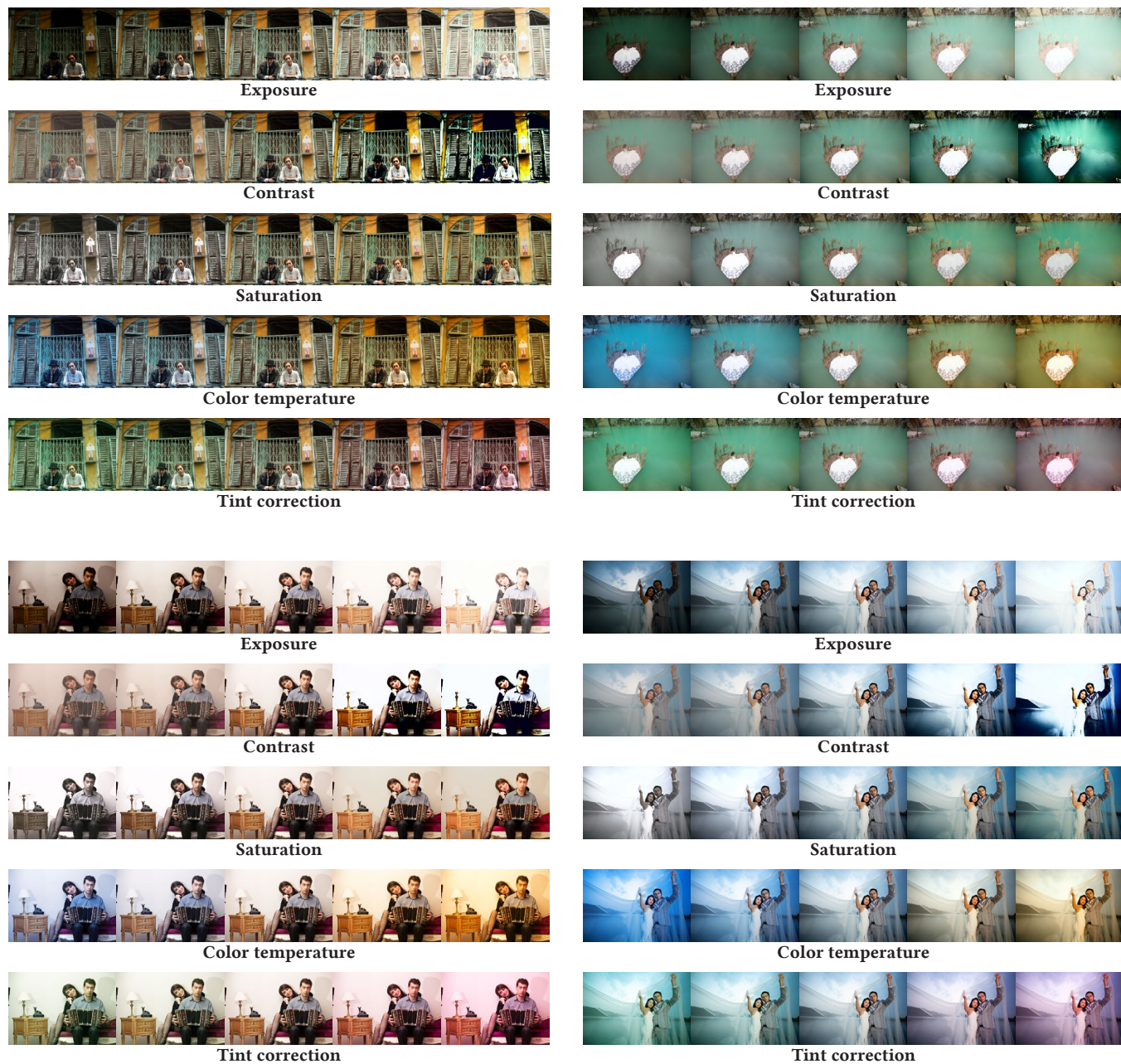


Figure 3: Visualization of learned filter effects. Only certain parameters are varied while others are held constant at 0. The images are samples from PPR10K.

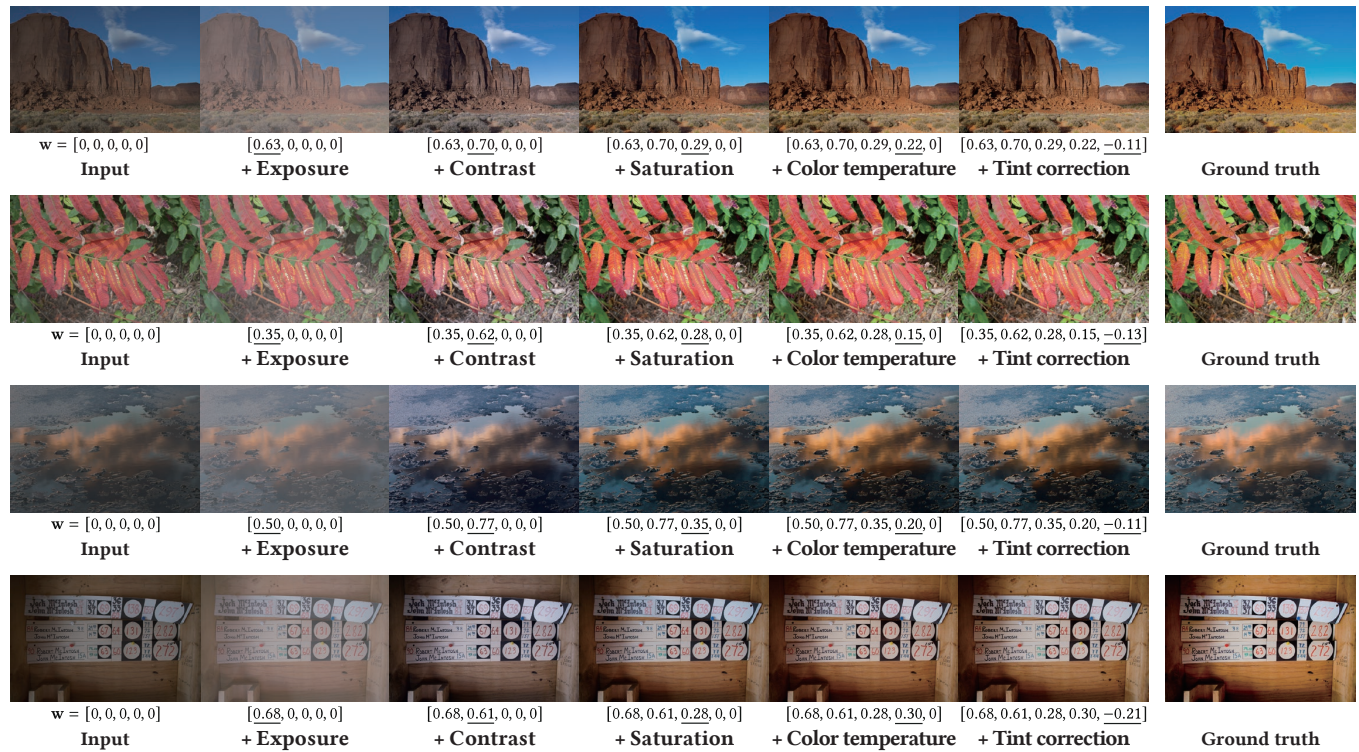


Figure 4: Sequential application of predicted parameters. This sequential application is for visualization purposes only, and the all effects are applied simultaneously in practice. The images are samples from FiveK.



Figure 5: Sequential application of predicted parameters. This sequential application is for visualization purposes only, and the all effects are applied simultaneously in practice. The images are samples from PPR10K.