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Visual fidelity improvement in virtual reality through spectral textures applied to lighting simulations.

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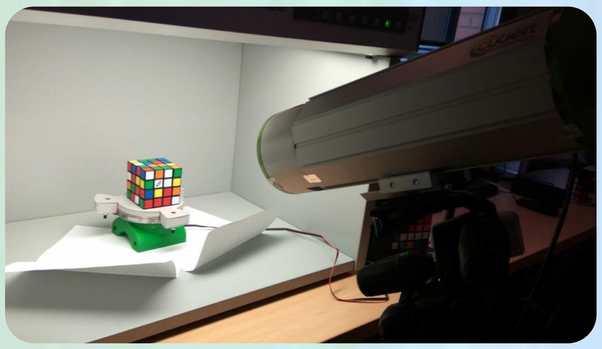
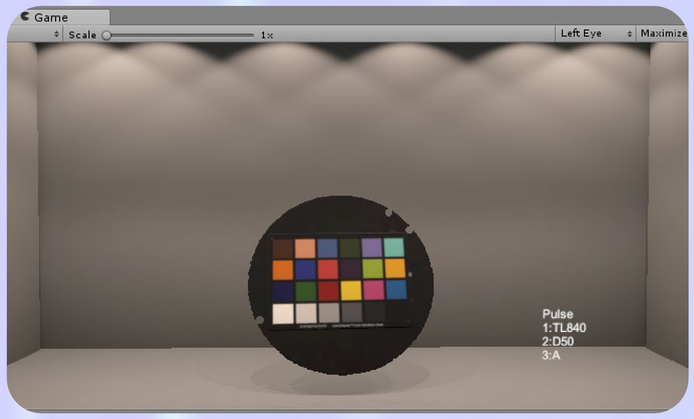
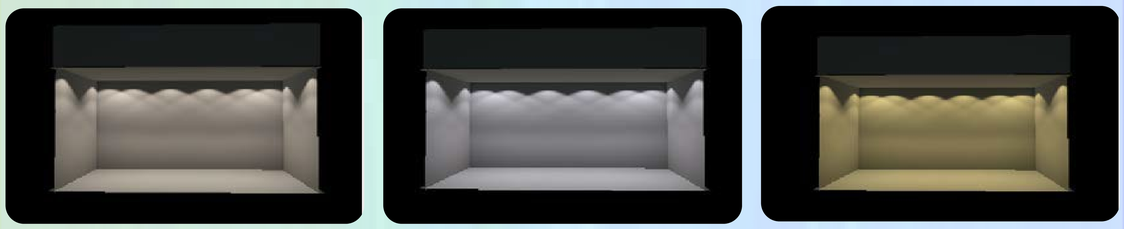


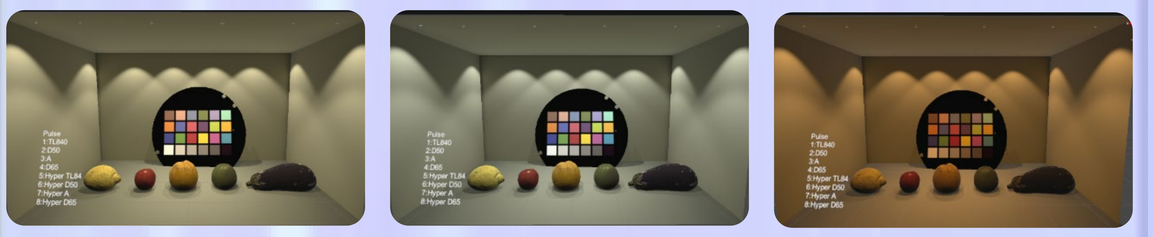
The main objective of this work is to define a new workflow applied to virtual reality systems that improve the visual appearence and fidelity of colors. We have performed a test with real observers to see if they perceive that improvement in visual fidelity of color. It is also intended to improve the overall look and feel of realism for virtual reality scenes.



Color Management	Light Source	$\overline{\Delta RGB}$ R	G	B	$\overline{\Delta XYZ}$ X	Y	Z	$\overline{\Delta E00}$
ICC Profile Color	TL84	2.7	2.4	1.8	0.6	0.5	0.3	2.4
	D50 Simulator	1.1	1.0	0.6	0.3	0.1	0.4	0.9
	A Simulator	1.6	1.5	4.0	0.4	0.1	0.4	3.5
	D50 Illuminant	0.6	0.4	0.3	0.3	0.2	0.2	0.5
Spectral Calculations	TL84	1.3	0.7	1.5	0.3	0.2	0.2	1.4
	D50 Simulator	0.7	0.4	0.6	0.2	0.1	0.2	0.6
	A Simulator	0.7	1.3	3.5	0.2	0.1	0.3	2.3
	D50 Illuminant	0.5	0.4	0.2	0.2	0.2	0.2	0.5



Differents light sources simulations



Hyperspectral textures with differents light sources

RESULTS

We have managed to set up a virtual stage with color management and simulation of different light sources (D50, D65, A). We have also managed to scan 3D objects and apply hyperspectral textures to improve the visual appearance in virtual reality.

NOVELTY

The novelty of this work is based on introducing spectral techniques to improve the color rendition in a virtual scene with different objects.

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