

Fig. 1 From left to right: original color image; decolorize; Neumann08; ours, $\lambda = 0.4$.



Fig. 2 From left to right: original color image; decolorize; Rasche05; ours, $\lambda = 0.4$.

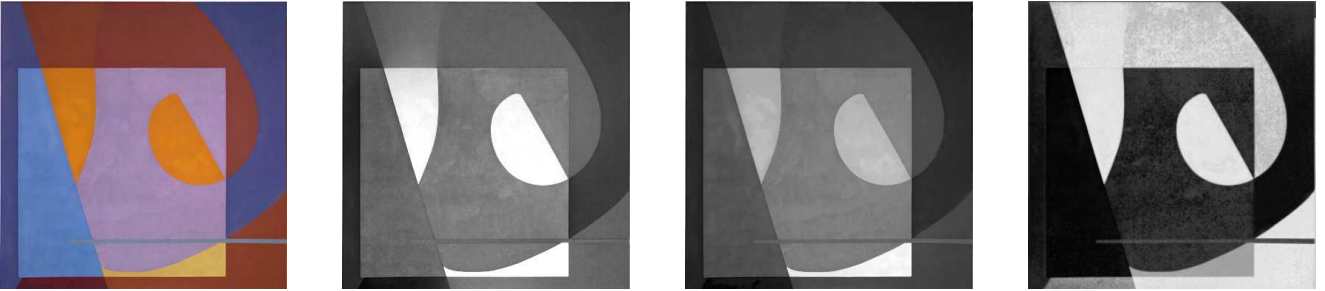


Fig. 3 From left to right: original color image; Neumann08; Rasche05; ours, $\lambda = 0.4$.

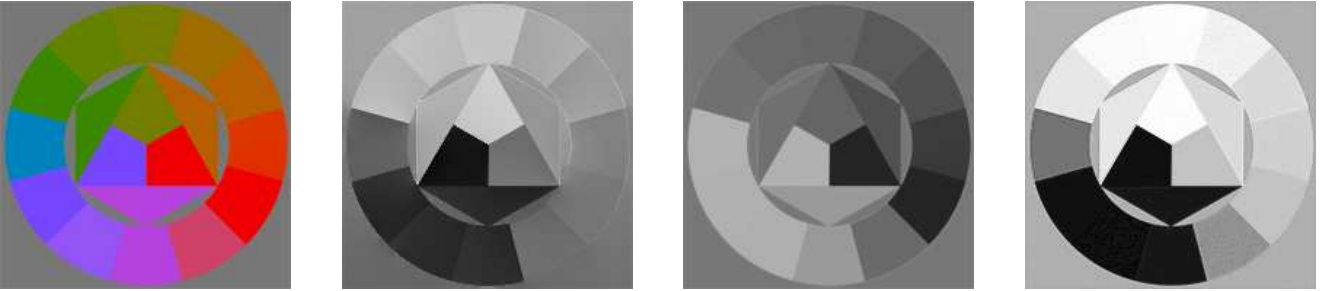


Fig. 4 From left to right: original color image; Neumann08; decolorize; ours, $\lambda = 0.4$.

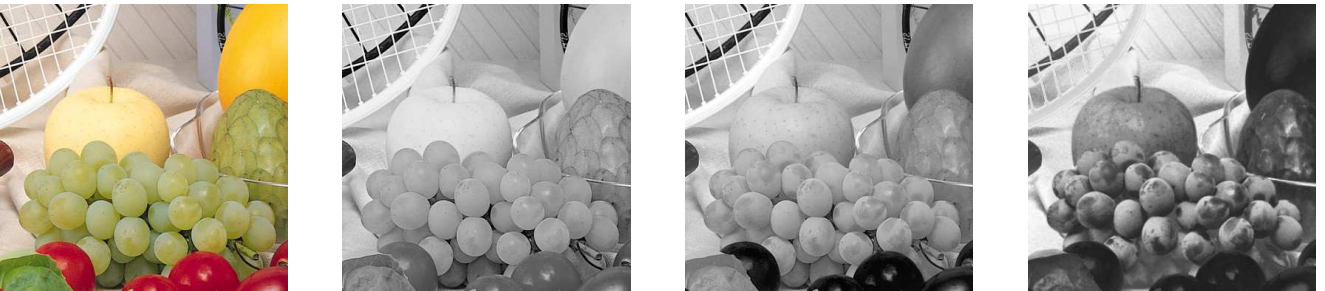


Fig. 5 From left to right: original color image; Smith08; decolorize; ours, $\lambda = 0.4$.



Fig. 6 From left to right: original color image; Smith08; decolorize; ours, $\lambda = 0.4$.



Fig. 7 From left to right: original color image; Smith08; rasche05; ours, $\lambda = 0.4$.

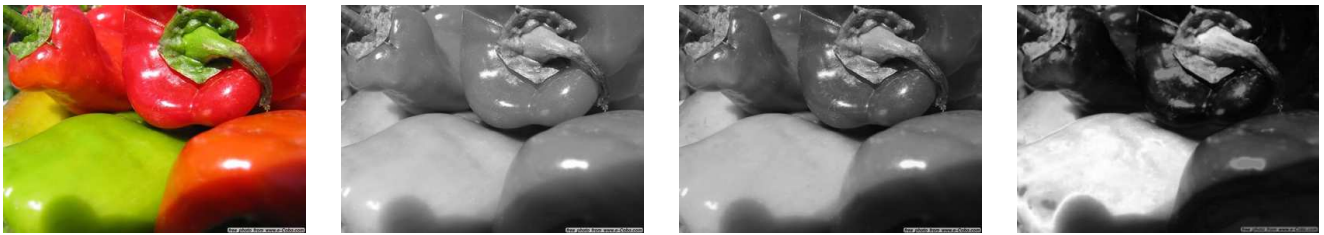


Fig. 8 From left to right: original color image; ciey; color2gray; ours, $\lambda = 0.4$.



Fig. 9 From left to right: original color image; ciey; color2gray; ours, $\lambda = 0.4$.



Fig. 10 From left to right: original color image; decolorize; smith08; ours, $\lambda = 0.4$.

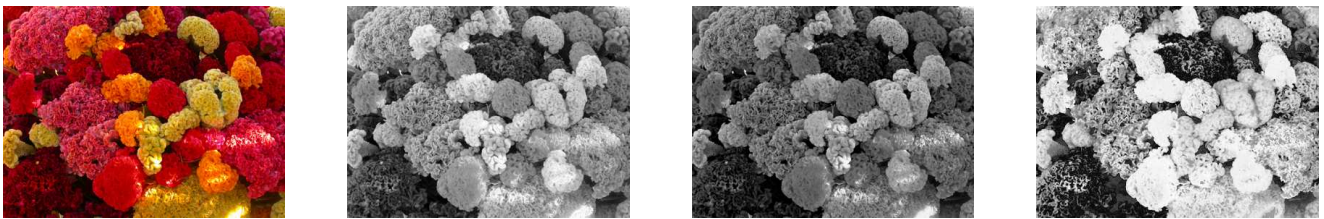


Fig. 11 From left to right: original color image; decolorize; Smith08; ours, $\lambda = 0.4$.

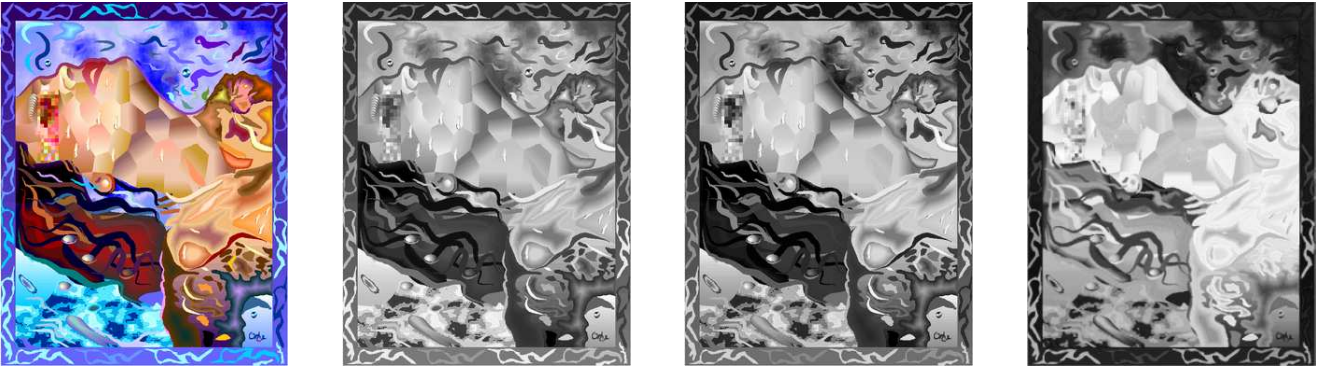


Fig. 12 From left to right: original color image; ciey; color2gray; ours, $\lambda = 0.4$.



Fig. 13 From left to right: original color image; ciey; smith08; ours, $\lambda = 0.4$.

The luminance generated by a physical device is generally not a linear function of the applied signal. A conventional CRT has a power-law response to voltage; luminance produced at the face of the display is approximately proportional to the applied voltage raised to the 2.5 power. The numerical value of the exponent of this power function is colloquially known as gamma. This nonlinearity must be compensated in order to achieve correct reproduction of luminance.

As mentioned above (What is lightness?), human vision has a nonuniform perceptual response to luminance. If luminance is to be coded into a small number of steps, say 256, then in order for the most effective perceptual

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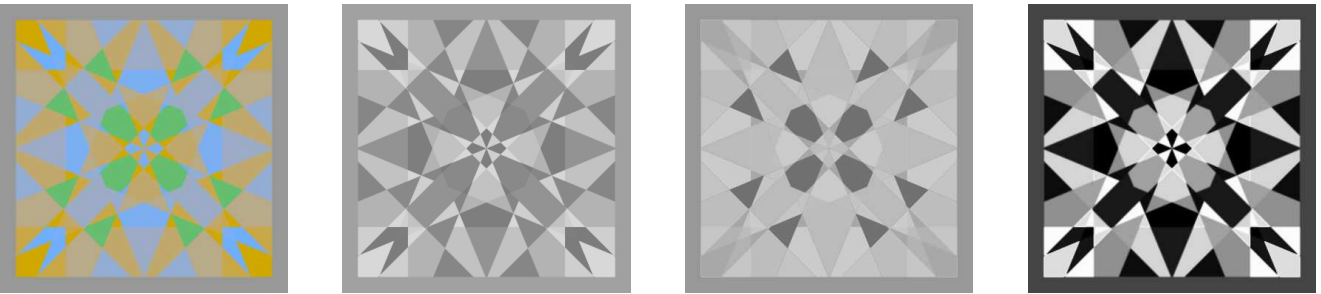


Fig. 15 From left to right: original color image; color2gray; decolorize; ours, $\lambda = 0.4$.

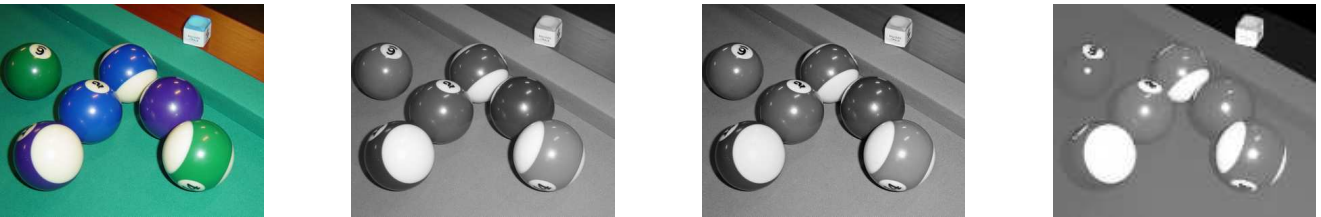


Fig. 16 From left to right: original color image; ciey; smith08; ours, $\lambda = 0.4$.



Fig. 17 From left to right: original color image; decolorize; smith08; ours, $\lambda = 0.4$.



Fig. 18 From left to right: original color image; decolorize; smith08; ours, $\lambda = 0.4$.