

Brightness adjustment by intensity scaling

Original image



$f[x, y]$

Scaled image



$a \cdot f[x, y]$

Scaling in the γ -domain is equivalent to scaling in the linear luminance domain

$$I \sim (a \cdot f[x, y])^\gamma = a^\gamma \cdot (f[x, y])^\gamma$$

. . . same effect as changing camera exposure time.



Contrast adjustment by changing γ

Original image



$$f[x, y]$$

γ increased by 50%



$$a \cdot (f[x, y])^\gamma$$

with $\gamma = 1.5$

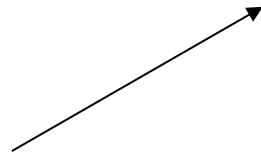
... same effect as using a different photographic film ...



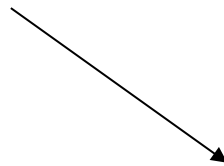
Contrast adjustment by changing γ



Scaled ramp $2 \gamma_0$



Original ramp γ_0



Scaling chosen to
approximately preserve
brightness of mid-gray



Scaled ramp $0.5 \gamma_0$