

























$$\begin{aligned} & \mathsf{RGB} \text{ to HSI Conversion} \\ & H = \left\{ \begin{array}{l} \theta & , & \text{if } B \leq G \\ 360 - \theta & , & \text{if } B > G \end{array} \right. \\ & \theta = \cos^{-1} \left\{ \frac{\frac{1}{2} [(R - G) + (R - B)]}{[(R - G)^2 + (R - B)(G - B)]^{1/2}} \right\} \\ & S = 1 - \frac{3}{R + G + B} \min(R, G, B) \\ & I = \frac{1}{3} (R + G + B) \end{aligned}$$



HSI to RGB Conversion Sector: $120 \le H \le 240$ H = H - 120 R = I(1 - S) $G = I\left[1 + \frac{S\cos H}{\cos(60 - H)}\right]$ B = 3I - (R + G)



























<image>

a b c

FIGURE 6.41 Image sharpening with the Laplacian. (a) Result of processing each RGB channel. (b) Result of processing the HSI intensity component and converting to RGB. (c) Difference between the two results.

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$$B_{\rm out} = B + \nabla^2 B$$





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