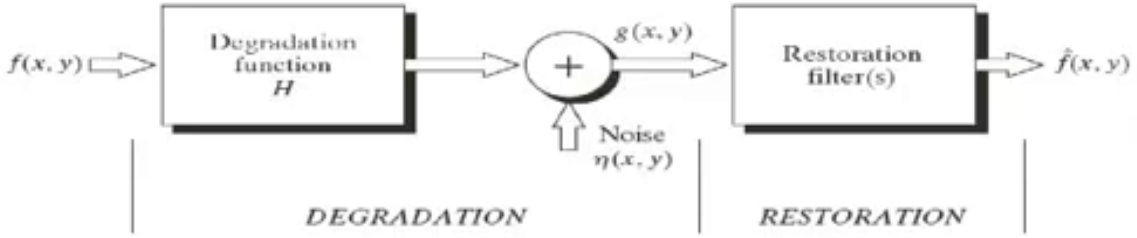
Wiener Filtering

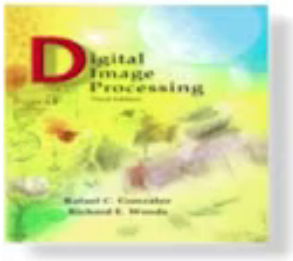


$$e^2 = E\left[(f(x,y) - \hat{f}(x,y))^2\right]$$

$$\hat{F}(u,v) = \left[\frac{H^*(u,v)}{H^2(u,v) + S_\eta / S_f}\right] G(u,v)$$

K

http://en.wikipedia.org/wiki/Wiener_filter



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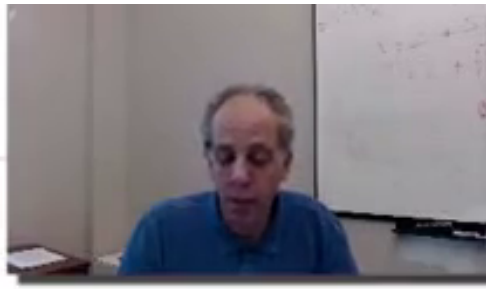
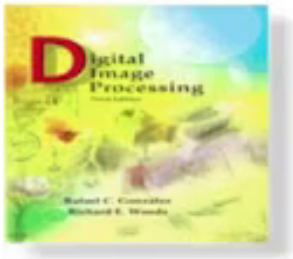


Chapter 5

Image Restoration and Reconstruction

$\frac{1}{H}$ Gaussian

$\frac{H^*}{H^2+K}$



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Chapter 5

Image Restoration and Reconstruction

$$\frac{1}{H}$$

$$\frac{H^*}{H^2 + K}$$

a b c
d e f
g h i

FIGURE 5.29 (a) 8-bit image corrupted by motion blur and additive noise. (b) Result of inverse filtering. (c) Result of Wiener filtering. (d)–(f) Same sequence, but with noise variance one order of magnitude less. (g)–(i) Same sequence, but noise variance reduced by five orders of magnitude from (a). Note in (h) how the deblurred image is quite visible through a "curtain" of noise.