





















version: 7/12/2006 © A. Pizurica, Universiteit Gent, 2 Noise models	2006
Noise models can be categorized according to	
 marginal statistics (first-order statistics, marginal probability density functio Gaussian, Rayleigh, Poisson, impulsive, 	n):
 higher-order statistics white noise (uncorrelated) colored (correlated) 	
 type of mixing with the signal additive multiplicative other (more complex) 	
 dependence on the signal statistically independent of the signal statistically dependent of the signal 	
Many techniques assume additive white Gaussian noise (AWGN) model	
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© A. Pizurica, Universiteit Gent, 2006 Types of mixing noise with signal

In many applications it is assumed that noise is additive and statistically independent of the signal

g(x, y) = f(x, y) + n(x, y)

This is a good model for example for thermal noise

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Often, noise is signal-dependent. Examples: speckle, photon noise,...

Many noise sources can be modelled by a multiplicative model:

$$g(x, y) = f(x, y)n(x, y)$$

In CMOS sensors there is a fixed-pattern noise and mixture of additive and multiplicative noise

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