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Application of local times of Markov processes to visual contours.

In this talk we view the enhancement of curves in images as a statistical estimation problem in which the classical Gestalt perceptual organization cues of proximity and good continuation are given a probabilistic formulation. As a prior for our estimation approach we employ the curve indicator random field (CIRF). This random field is a superposition of local times of Markov processes that model the individual curves; intuitively, it is an idealized artist's sketch, where the value of the field is the amount of ink deposited by the artist's pen. The explicit formulation of the CIRF allows the calculation of tractable formulas for its cumulants and moment generating functional. Using these formulas, we derive a nonlinear filter for denoising edge detector responses. (Received September 14, 2004)