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Mumford–Shah vs Perona–Malik; an analytic view at image processing

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Abstract

In mathematical image processing we are often presented with amazing examples of image enhancement algorithms. Yet, when applied to different noisy images, they can produce unwanted effects. The analysis of such algorithms lags behind their intuitive development. Two essentially different models have found wide recognition: a variational approach due to Mumford and Shah, and an anisotropic diffusion approach leading to an evolution type equation by Perona and Malik. In my lecture I will reveal a connection between these two seemingly unrelated approaches and explain some connections with TV-flow.