Besov, Bayes, and Plato
in Multiscale Statistical Modeling

Richard Baraniuk

Department of Electrical and Computer Engineering

Rice University

Houson, Texas, USA

Abstract – *There currently exist two distinct paradigms for modeling images. In the first, images are regarded as functions from a deterministic function space, such as a Besov smoothness class. In the second, images are treated statistically as realizations of a random process. This talk reviews and indicates the links between the leading deterministic and statistical image models, with an emphasis on multiresolution techniques and wavelets. To overcome the major shortcomings of the Besov smoothness characterization, we develop new statistical models based on mixtures on graphs. To illustrate, we discuss applications in image estimation and segmentation.*

This is joint work with Hyeokho Choi, Michael Orchard, Justin Romberg, and Michael Wakin at Rice University. For more information, related papers, and software, please visit our web site at www.dsp.rice.edu