Abstract: "Structural adaptive smoothing methods"

Structural adaptive smoothing provides a new approach to non-parametric modelling. Emphasizing on local homogeneity we are able to obtain iterative procedures with remarkable properties. Procedures like Adaptive Weights Smoothing (AWS) allow to achieve an almost parametric behaviour if a specified local model is valid globally or in a large homogeneous region. The method is fully adaptive and dimension free. First applications included imaging problems, where the underlying image function is piecewise constant or piecewise smooth. Generalizations allow for a wide class of probabilistic models for image gray values including binary images, Poisson counts and exponential models. Applications in time series analysis focus on local stationarity.