

Meeting: 999, Nashville, Tennessee, SS 2A, Special Session on Wavelets, Frames, and Sampling

999-65-265

Peter G. Binev* (binev@math.sc.edu), Industrial Mathematics Institute, Department of Mathematics, University of South Carolina, Columbia, SC 29208. *Adaptive Learning of Functions*.

We consider the problem of approximating a function given via noisy sampling data with some unknown probability distribution. A common approach is to use multiresolution representation and N -term approximation techniques. However, the natural metric to measure the error is the one induced by the unknown probability measure, which stays behind the point sampling. This makes the use of wavelet representations impossible, since the wavelet basis itself depends upon this measure and therefore is unknown. The method we propose is based on recent developments in mathematical learning theory and the derivation of probabilistic error estimates for a universal estimator based on piecewise constant approximation on adaptively generated partitions. (Received August 24, 2004)