

[Yiqiao Chen 2024/3/13]

1. Contribution

Background Information:

- ① wavelet based thresholding has near-optimal properties
in the minimax sense. \Leftarrow wavelet shrinkage (Donoho, Johnstone)
- ② most focused on "statistical modeling of wavelet coefficients"
and "the optimal choice of the thresholds"

Contribution for this paper: \downarrow custom thresholding function \Leftarrow A new thresholding function that can take place of the traditional thresholding functions (such as soft thresholding and hard thresholding)

2. branch

wavelet thresholding

- a) wavelet shrinkage
(Donoho, Johnstone)
- b) variational problem \Rightarrow
(DeVore, Lucier)
more like a proof work

\downarrow find an approximation \tilde{f} for given f on domain I

1. balance the smoothness of \tilde{f} \Leftarrow i.e. minimize $\|f - g\|_{L_2(I)}^2 + \lambda \|g\|_X$
2. closeness to the f

\uparrow
choose \tilde{f}

Besov space

c) Hidden Markov Trees \Rightarrow model the dependences among adjacent wavelet coefficients
(Crause, et al.) using the HMT and MMSE-like estimators for suppressing the noise.