Why Sparse? Fuzzy Techniques Explain Empirical Efficiency of Sparsity-Based Data- and Image-Processing Algorithms

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In many practical applications, it turned out to be efficient to assume that the signal or an image is *sparse*, i.e., when we decompose it into appropriate basic functions (e.g., sinusoids or wavelets), most of the coefficients in this decomposition will be zeros; see, e.g., [1, 2, 3].

At present, the empirical efficiency of sparsity-based techniques is somewhat a mystery. In this paper, we show that fuzzy-related techniques (see, e.g., [4, 5]) can explain this empirical efficiency.

References

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