CHOOSING THE REGULARIZATION PARAMETER IN IMAGE RESTORATION

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ABSTRACT

Many procedures in statistical image restoration can be regarded as regularization techniques involving a scalar smoothing parameter. The paper collates several methods for choosing the smoothing parameter, including model-based maximum likelihood. Minimum risk, generalized cross-validation, choice based on fit to the data, and "equivalent degrees of freedom" choice. Some theoretical and empirical comparisons are summarized.

Keywords: Image restoration; ill-posed inverse problems; cross-validation; ridge regression; regularization; smoothing.