

Numerical methods for estimating the tuning parameter in penalized least squares problems

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Abstract

The solution of the penalized least squares problems depends on a tuning parameter. A popular tool for specifying the tuning parameter is the generalized cross-validation (GCV). In this work, we are concerned with the estimation and minimization of the GCV function by using a combination of an extrapolation procedure and a statistical approach. We apply simulations for different statistical designs and we report the Type I and Type II error rates in order to compare the behaviour of the proposed method with the corresponding estimates of the tuning parameter which are obtained by minimizing the exact GCV function. The Type I and Type II error rates are computed considering the L_1 , the hard thresholding and the Smoothly Clipped Absolute Deviation penalty functions.

References

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