

An adaptive residual sub-sampling algorithm for kernel interpolation based on maximum likelihood estimations

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In this contribution we propose an enhanced version of the residual sub-sampling method (RSM) in [1] for adaptive interpolation by radial basis functions (RBFs). More precisely, we introduce in the context of sub-sampling methods a maximum profile likelihood estimation (MPLE) criterion for the optimal selection of the RBF shape parameter. This choice is completely automatic, provides highly reliable and accurate results for any RBFs, and, unlike the original RSM, guarantees that the RBF interpolant exists uniquely. The efficacy of this new method, called MPLE-RSM, is tested by numerical experiments on some 1D and 2D benchmark target functions.

Joint work with: Alessandra De Rossi.

References

- [1] T.A. Driscoll, A.R.H. Heryudono. Adaptive residual subsampling methods for radial basis function interpolation and collocation problems. *Comput. Math. Appl.*, 53:927–939, 2007.