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A.M. Colubi, E.J. Kontoghiorghes &
B.U. Park, Editors

Paris, 19 juillet 2017

Dear Editors,

Please find, here enclosed, our manuscript entitled *Sparsity by Worst-Case Penalties*, which we submit to *Computational Statistics & Data Analysis*.

Sparse methods are now ubiquitous in statistics and statistical learning. An important part of the literature is still dedicated to crafting new sparsity-inducing penalties, which often require new optimization procedures with varying complexity. In our manuscript, we introduce a new interpretation of sparsity and an unifying view for a large family of penality-based approaches, thus providing additional insight on these methods. More importantly, this view paves the way for an unifying optimization strategy. We implement this strategy for the popular elastic-net and compare our algorithm with existing implementations. In particular, we show that our method provides very accurate solutions. This accuracy is required for the correctness of the support of the solution and is not always met by existing softwares.

We feel that this work might be of interest to the readers of your journal and is in its scope.

We confirm that this manuscript has not been published elsewhere and is not currently under consideration by another journal. All authors have approved the manuscript and agree with its submission to your journal.

Sincerely yours,

Julien Chiquet (on behalf of the authors)