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Smooth minimization of non-smooth functions

We propose a new approach for constructing efficient schemes for non-smooth convex optimization. It is based on a special smoothing technique, which can be applied to the functions with explicit max-structure. Our approach can be considered as an alternative to the black-box minimization. From the viewpoint of efficiency estimates, we manage to improve the traditional bounds on the number of iterations of the gradient schemes from $O\left(\frac{1}{\epsilon^2}\right)$ to $O\left(\frac{1}{\epsilon}\right)$, keeping basically the complexity of each iteration unchanged.