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RANDOMIZED BLOCK PROXIMAL METHOD WITH LOCALLY LIPSCHITZ CONTINUOUS GRADIENT

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Block-coordinate algorithms are well recognized for their efficiency in tackling large-scale optimization problems, especially when computing full derivatives is memory-intensive and computationally expensive. In this talk, we present a randomized block proximal gradient algorithm for minimizing the sum of a differentiable function and a separable, proper lower semicontinuous function with both potentially nonconvex.

In contrast to existing methods, our approach only requires the partial gradients of the differentiable function to be locally Lipschitz continuous, eliminating the need for knowledge of global Lipschitz constants. A key feature of the algorithm is its ability to adaptively select stepsizes that ensure sufficient decrease, without prior information about local smoothness parameters.

Finally, the talk concludes with numerical experiments, including an image compression task using nonnegative matrix factorization, which illustrate the practical effectiveness of the proposed method.

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