

On stochastic mirror descent under relative nonconvexity

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The notions of relative (weak) convexity and variation (e.g., Lipschitzness and smoothness) have been successfully applied to some optimization problems, including applications in machine learning. While typically harder to prove, these properties encode better dependence of the objective with respect to the intrinsic geometry of the problem. We review previous analysis of the mirror descent method under relative properties and present novel convergence analysis within this framework. In particular, we consider relative notions of the Polyak-Łojasiewicz inequality and its consequences. If time permits, we will also present some applications in machine learning.

Author: Dr THOMPSON, Philip (FGV-EMAp)

Orateur: Dr THOMPSON, Philip (FGV-EMAp)

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