A STOCHASTIC MAJORIZE-MINIMIZE SUBSPACE ALGORITHM WITH APPLICATION TO FILTER IDENTIFICATION PROBLEMS

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Stochastic approximation techniques play an important role in solving many problems encountered in machine learning or adaptive signal processing. In these contexts, the statistics of the data are often unknown a priori or their direct computation is too intensive, and they have thus to be estimated online from the observed signals. For batch optimization of an objective function being the sum of a data fidelity term and a penalization (e.g. a sparsity promoting function), Majorize-Minimize (MM) methods have recently attracted much interest since they are fast, highly flexible, and effective in ensuring convergence. The goal of this talk is to show how these methods can be successfully extended to the case when the data fidelity term corresponds to a least squares criterion and the cost function is replaced by a sequence of stochastic approximations of it. An online version [**?**] of the MM subspace algorithm [**?**], along with its convergence properties, will be presented. Simulation results will illustrate the good practical performance of the proposed algorithm associated with a memory gradient subspace, when applied to both non-adaptive and adaptive filter identification problems.

Références

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