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Objet: COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC/Québec (01/05/2015, Éric Moulines)
Date: 27 avril 2015 10:53
À: activites@CRM.UMontreal.CA

COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC / Laval
<http://www.crm.umontreal.ca/Colloques/colloqueSMQ-Quebec.html>

DATE :
Le vendredi 1 mai 2015 / Friday, May 1, 2015

HEURE / TIME :
14 h / 2:00 p.m.

CONFERENCIER(S) / SPEAKER(S) :
Éric Moulines (Télécom ParisTech)

TITRE / TITLE :
Gradient proximal stochastique et applications pour l'inférence de modèles à effets mixtes en grande dimension

LIEU / PLACE :
Université Laval, Pavillon Alexandre Vachon, salle 3820

RESUME / ABSTRACT :
We study a perturbed version of the proximal gradient algorithm for which the gradient is not known in closed form and should be approximated. We address the convergence and derive a non-asymptotic bound on the convergence rate for the perturbed proximal gradient, a perturbed averaged version of the proximal gradient algorithm and a perturbed version of the fast iterative shrinkage-thresholding (FISTA) of Beck and Teboulle (2009). When the approximation is achieved by using Monte Carlo methods, we derive conditions involving the Monte Carlo batch-size and the step-size of the algorithm under which convergence is guaranteed. In particular, we show that the Monte Carlo approximations of some averaged proximal gradient algorithms and a Monte Carlo approximation of FISTA achieve the same convergence rates as their deterministic counterparts. To illustrate, we apply the algorithms to high-dimensional generalized linear mixed models using ℓ_1 -penalization.

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