Stochastic Primal Dual Fixed-Point Methods for composite convex models in Statistical Learning

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In this work we propose a stochastic primal dual fixed point method (SPDFP) for solving a sum of two (and three) proper lower semi-continuous convex function one of which is composited with a linear operator. Under some assumptions we proved the convergence order $O(k^{-\alpha})$ of the iterates. Finally, numerical experiments for linear regression and logistic regression problems are performed to demonstrate the effectiveness of the proposed algorithms.