

We consider multi-user optimization problems and Nash games with stochastic convex objectives, instances of which arise in decentralized control problems. The associated equilibrium conditions of both problems can be cast as Cartesian stochastic variational inequality problems with mappings that are strongly monotone but not necessarily Lipschitz continuous. Consequently, most of the currently available stochastic approximation schemes cannot address such problems. First, through a user-specific local smoothing, we derive an approximate map that is shown to be Lipschitz continuous with a prescribed constant. Second, motivated by the need for a robust scheme that can be implemented in a distributed fashion, we develop a distributed self-tuned stochastic approximation scheme (DSSA) that adapts to problem parameters. Importantly, this scheme is provably convergent in an almost-sure sense and displays the optimal rate of convergence in mean squared error, i.e., $O(1/k)$. A locally randomized variant is also provided to ensure that the scheme can contend with stochastic non-Lipschitzian multi-user problems. We conclude with numerics derived from a stochastic Nash-Cournot game.