A first order method for finding minimal norm-like solutions of convex optimization problems

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Abstract

We consider a general class of convex optimization problems in which one seeks to minimize a strongly convex function over a closed and convex set which is by itself an optimal set of another convex problem. We introduce a gradient-based method, called the minimal norm gradient method, for solving this class of problems, and establish the convergence of the sequence generated by the algorithm as well as a rate of convergence of the sequence of function values. A portfolio optimization example is given in order to illustrate our results.