

Title :

Sparse Investment Portfolio Design and Finance Index Tracking

Abstract:

Nonnegative sparse recovery under sum-to-one constraint is a special form of linear regression problems, where the solution is required to simultaneously satisfy sparsity, nonnegativity and sum-to-one constraints. It has been the core problem of two applications, namely, sparse index tracking and sparse portfolio design. In this talk, we will discuss several algorithms to solve these problem. In some algorithms, we need to perform a nonconvex projection, the constraint set consists of the ℓ_0 -norm, nonnegativity and sum-to-one constraints. We discuss an efficient algorithm for performing the nonconvex projection and prove that the proposed algorithm produces the optimal solution for the nonconvex projection. Numerical experiments are given to demonstrate the effectiveness of the proposal algorithms.