

Abstract

The central problem of the theory of compressive sensing is to reconstruct a sparse vector from its lower dimensional linear measurement. In this thesis, we cover some elementary theory of compressive sensing, including necessary and sufficient conditions to guarantee recovery from underdetermined systems by convex optimization methods. Subsequently, we simulate recovery of sparse vectors from gaussian random matrices and study the trends in error of recovery depending on the number of measurements and sparsity of target vectors. We conclude by studying the performance of sparse vectors in real world systems such spin covariance systems and Optimal Markowitz portfolios.