Abstract

Compressive sensing (CS) is an emerging research field that has applications in signal processing, error correction, medical imaging, seismology, and many more other areas. CS promises to efficiently reconstruct a sparse signal vector via a much smaller number of linear measurements than its dimension. In order to improve CS reconstruction performance, this paper presents a novel reconstruction greedy algorithm called the Enhanced Orthogonal Matching Pursuit (E-OMP). E-OMP falls into the general category of Two Stage Thresholding (TST)-type algorithms where it consists of consecutive forward and backward stages. During the forward stage, E-OMP depends on solving the least square problem to select columns from the measurement matrix. Furthermore, E-OMP uses a simple backtracking step to detect the previous chosen columns accuracy and then remove the false columns at each time. From simulations it is observed that E-OMP improve the reconstruction performance better than Orthogonal Matching Pursuit (OMP) and Regularized OMP (ROMP).


Keywords

Compressed sensing  Forward-backward search  Sparse signal reconstruction
Greedy algorithms

Index Terms

Computer Science  Signal Processing