

AUDIO COMPRESSIVE SENSING USING ORTHOGONAL MATCHING PURSUIT ALGORITHM

USHAM DIAS

Department of Electronics and Telecommunications,
Padre Conceicao College of Engineering, Goa, India.

Abstract

This paper implements Orthogonal Matching Pursuit (OMP) algorithm for reconstruction of audio signal acquired using the compressive sensing paradigm. The sensing matrices used include Gaussian, Bernoulli with +/- 1 value, Bernoulli with 0/1 value and Hadamard. The sensing and reconstruction was performed on two different audio sequences using a block size of 256. Discrete Cosine Transform (DCT) was used as the sparsifying basis. The results obtained show that, all the sensing matrices tested have low reconstruction error when measurement to sparsity ratio is 4. Hadamard matrix lagged behind the other patterns in terms of relative error for larger measurements but had the advantage at lower measurements. Results obtained indicate that a simple Bernoulli 0/1 pattern which is easily implementable in hardware can be used for audio compressive sensing.

Keywords : Audio; compressive sensing; greedy reconstruction; sensing pattern; Orthogonal Matching Pursuit;

© <http://www.ascent-journals.com>