

Department of Electrical and Computer Engineering
The Johns Hopkins University
520.648 Compressive Sensing and Sparse Recovery – Spring 2017

Homework Assignment I

Reading Assignment: Lecture Notes

Computer Assignment: Sparse Recovery via ℓ_0 -minimization

1. **Recovery Challenge:** I have a signal \mathbf{x} of 100 samples ($N = 100$) where only 3 of these samples are nonzero ($S = 3$). The location and magnitude of these nonzero samples are unknown. I used two different sensing matrices on \mathbf{x} and obtained two set of measurements. You can download these sensing matrices and measurement vectors from the course web page. Can you recover \mathbf{x} by solving the classic ℓ_0 -minimization problem? *Hint:* Matlab built-in function `nchoosek(1 : N, S)` yields all subsets of s columns.

Due date: **Thurs, Feb. 9th** in class