How To USE THIS FOLDER

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1 Introduction

This folder includes the optimally tuned implementation of three different algorithm iterative soft thresholding (IST), iterative hard thresholding (IHT) and two stage thresholding (TST). For more information about any of these algorithms you may refer to the paper, "Optimally tuned iterative thresholding algorithms for Compressed sensing" by A. Maleki and D. L. Donoho. The algorithms presented in this folder are optimally tuned for the case of SlowOp matrix ensembles. This may include the Gaussian ensemble, uniform spherical ensemble (USE), Random sign ensemble (RSE) and Uniform Random Projection (URP). For the case where the measurement matrix is partial Fourier or similar transforms you may download the other folder.

2 Main Files

There are four main files in this folder. It is very important to understand the functionality of these files.

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1) RecommendedTST
2) RecommendedIHT
3) RecommendedIST
4) SolveOMP
5) SolveLasso
6) OptimalAlgorithmChecker
```

The first five files include the implementation of the five algorithms TST, IHT and IST, OMP and LARS-Lasso. The last file provides an example for you in order to see how you construct a problem instance and call these functions. We recommend that you first open the file "OptimalAlgorithmChecker.m" and run this file. Then you can easily use the code to generate your own problem instance and run the algorithm. In addition to these files we have provided some other tools that can generate matrix ensembles and coefficient ensembles for you.

The final remark that we want to make here is that all the files have helps so in case you want to use the other files you may use their own helps.