This folder was updated at 28/08/2017 by Shenglong Zhou, and generated most of corresponding data or plots appeared in numerical part of the manuscript titled 'A Null-Space-Based Weighted ℓ_1 Minimization Approach to Compressed Sensing', in which the proposed algorithm was named modified iterative reweighted ℓ_1 minimization (MIRL1). In this folder, there are 5 ".m" files all of which except for `CSMatrix.m` can be run directly.

We now explain them as follows:

- `CSMatrix.m` aims at generating data of four examples, Gaussian, Partial DCT, Toeplitz Correlation and Over Sampled Partial DCT type measurement matrices A, the ground truth sparse solution x_{opt} and the observation vector b, namely $Ax_{opt} = b$.

- `Demon.m` aims at demonstrating MIRL1 for recovering the compressed sensing problems under four examples:

  `problemname` $=$ {`'GaussianMat','PartialDCTMat','ToeplitzCorMat','OverSamDCTMat'`}

  Changing different m, n and k(the sparsity of x_{opt}) for each example will derive different results. For example, for a Gaussian type matrix

  $$m = 2000; n = 4 * m, k = \texttt{floor}(0.01n); \texttt{problem} = \texttt{proname}\{1\};$$

- `SuccessRate_for_Gau_pDCT.m` aims at generating recovery success rate for Gaussian and Partial DCT type measurement matrices with fixed m, n and different k, e.g. $m = 64, n = 256, k = 10 : 2 : 40$.

- `SuccessRate_for_Toe_opDCT.m` aims at generating recovery success rate for Toeplitz Correlation and Over Sampled Partial DCT type measurement matrices with fixed m, n and different k.

- `Error_Time_for_Gau_pDCT.m` aims at generating recovery error and CPU time for Gaussian and Partial DCT type measurement matrices,

Moreover, there is one folder named 'MIRL1' containing the solver, `MIRL1` and `yall1`(available at http://yall1.blogs.rice.edu/, which is used for MIRL1 to solve a subproblem: a weighted ℓ_1 minimization) .