Department of Electrical and Computer Engineering
The Johns Hopkins University
525.628 Compressed Sensing and Sparse Recovery – Spring 2022

Module 8 - Homework Assignment

Reading Assignment: Lecture Notes; JLL and SRM journal paper

Compare the following three sensing matrices in your image recovery framework from Module 6 Assignment:

- Random Gaussian
- Random Subsampling
- Structurally Random Matrices (SRM).

Consider the following SRM construction – a block-diagonal matrix where each block on the diagonal of size B is a scaled product of 3 matrices: **RFD**, where **D** is either a diagonal matrix of i.i.d Bernoulli random variables or a matrix of uniform random permutation; **F** is either an $B \times B$ Hadamard matrix or DCT matrix; and **R** is a random subset of rows of the $B \times B$ identity matrix. Any observation on the recovery results?