CS 754
ADVANCED IMAGE PROCESSING

Project Proposal

Team
Udayan Joshi - 150070018
Pranav Kulkarni - 15D070017

Project Topic :
Inferring mismatch in image representations

Link to the paper :
http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6815988&tag=1

Application in compressive radar:
http://iopscience.iop.org/article/10.1088/0266-5611/29/5/054008/pdf

Details:
Basis mismatch problem refers to the dramatic increase in the estimation error due to small deviations from the exact signal model. Even a good signal model can yield a poor reconstruction due to seemingly small differences between basis vectors assumed by the reconstruction algorithm and a similar set yielding a far sparser representation of the signal.

The paper presents an iterative, biconvex search algorithm using standard L1 norm minimization to find the signal model coefficients followed by a maximum likelihood estimate of the signal model.

As illustrated in the paper, we will apply the methods presented in the paper on harmonic signals of varying sparsity. We will compare the results with few other algorithms for the basis mismatch problem.