1056-49-173 **Josh Koslosky*** (Koslosky504@gmail.com), 120 Bartley rd., Pittsburgh, PA 15241, and **Stacey Levine** (levine.stacey@gmail.com), Dept. of Mathematics and Computer Science, Duquesne University, 440 College Hall, Pittsburgh, PA 15282. *Image Denoising Via Feature-Based Sparse and Redundant Dictionaries.* Preliminary report.

In recent years the computer vision community has demonstrated that sparse and redundant representations of image patches can be used to denoise images. These representations can be formed using dictionaries that are either fixed (e.g. Discrete Cosine Transform) or learned from the noisy data itself. Finding the best patch representation leads to a constrained optimization problem, which depending on its formulation can be nonconvex. Elad and Aharon propose such a model which learns the dictionary from the noisy data, which they solve using Orthogonal Matching Pursuit and K-SVD (a modification of the Singular Value Decomposition inspired by K-means). In this talk we propose a modification of their algorithm in which dictionaries can be tailored to denoise smooth regions, textured regions, and edges separately. In particular, we discuss several approaches for segmenting an image based on these different geometric properties, and how dictionaries tailored to these properties can improve both the image representation and denoising. (Received August 11, 2009)