

1067-68-584

**Akram Aldroubi\*** ([akram.aldroubi@vanderbilt.edu](mailto:akram.aldroubi@vanderbilt.edu)), 1520 Stevenson Center, Dept of Mathematics, Vanderbilt University, Nashville, TN 37240. *Non-linear signal representations, subspace clustering and some applications.*

There are new paradigms for signal representations that considers signals as elements of a union of subspaces in an ambient Hilbert space. This type of models is inherent in the theory of compressed sensing and signals with finite rates of innovation. Prototypical examples in which signals can be well modeled by a union of subspaces are the signals that are acquired from moving objects in video sequences and those acquired from facial views of a set of human subjects in various positions and under various illuminations. Learning the models from the data allows us to track objects in video sequences and recognize faces from images. In this talk, we will explain how to learn the model from the data, and give some mathematical results showing the existence of optimal signal models. We then show how the models can be used to track moving objects in video sequences. (Received September 10, 2010)