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The dimensionality of financial markets is the least number of factors, either linear or non-linear, required to approximately explain the market behavior. It is an empirical observation that during different market conditions the minimum number of factors required to decompose market behavior changes, consequently changing the dimensionality of the market. Classic approaches in this domain include linear techniques such as Principal Component Analysis, where new orthogonal features are created by linearly combining observed factors and projecting them along the direction of maximum variability. However, such simple approaches do not necessarily tell the full story and in this talk, we will discuss various techniques for estimating the dimensionality of financial markets. In particular, we consider techniques ranging from the non-linear (e.g. ISOMAP) to the robust (e.g. Robust Principal Component Analysis), including a foray into quite modern techniques that combine these two ideas including a type of neural network called a Robust Deep Autoencoder. (Received September 23, 2018)