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Compressive Signal Processing.

Despite the apparent need for adaptive, nonlinear techniques for dimensionality reduction, random linear projections have proven to be extremely effective at capturing signal structure in cases where the signal obeys a low-dimensional model. Similarly, random projections are a useful tool for solving problems where the ultimate question of interest about the data requires a small amount of information compared to the dimensionality of the data itself. The success of random projections in both of these arenas can be traced to an elementary concentration of measure property, which allows us to extend the utility of random projections to a variety of new signal models and applications. (Received July 03, 2007)