

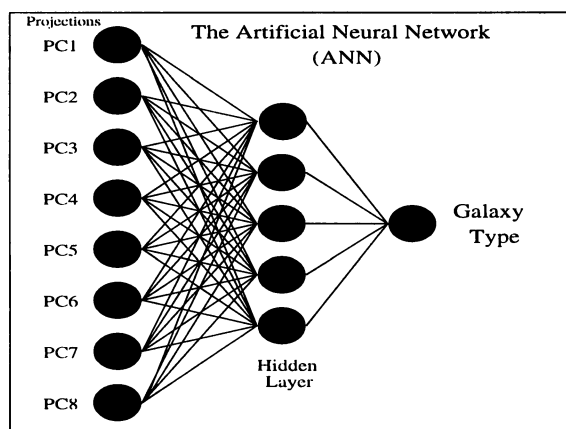
# AN ANN APPROACH TO CLASSIFICATION OF GALAXY SPECTRA FOR THE 2DF GALAXY REDSHIFT SURVEY

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## Description

We present a method for automated classification of galaxies with low signal-to-noise (S/N) spectra typical of redshift surveys. We develop spectral simulations based on the parameters for the 2dF Galaxy Redshift Survey and investigate the technique of Principal Component Analysis when applied to spectra of low S/N. It is found that the projection onto the first 8 Principal Components hold most of the real spectral information, with later projections only adding noise. Using these components as input, we train an Artificial Neural Network (ANN) to classify the noisy simulated spectra into morphological classes. We find that more than 90% of our sample of normal galaxies are correctly classified into one of five morphological classes for simulations at  $b_J=19.7$ .



*Figure 1.* The ANN architecture. The projection onto the first 8 Principal Components is used as an input, and the output is a single number corresponding to the galaxy morphology