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Chong Sun* (chong_sun@baylor.edu), 1, TX. *Forecasting Monthly Stock Return through K-Means Clustering and Support Vector Machine*. Preliminary report.

In this project, we try to predict returns of stocks in the future month with unsupervised clustering and support vector machine. Financial data especially stock prices are famous for its nonlinearity which makes it hard to predict their future movement. A common approach is to use local adaptive methods to deal with the nonlinearity. However local adaptive methods pose high computational difficulty especially for high dimensional data. We propose a K-Means clustering algorithm to partition the stock return data to 4 clusters to deal with the locality. We then fit a support vector machine for each of 4 clusters. This way we are able to deal with nonlinear nature of the data while keep the learning task easy to compute. The method can be viewed as a type of Bayesian methods in which partitioning can be treated as taking prior information into consideration during the learning process. (Received September 17, 2018)