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Vindya Kumari Pathirana* (vindya.pathirana@uconn.edu), Department of Mathematics, University of Connecticut, and **Kandethody M Ramachandran** (ram@usf.edu), Department of Mathematics and Statistics, University of South Florida. *Mahalanobis Based k-Nearest Neighbor Forecasting versus Time Series Forecasting Methods*. Preliminary report.

Foreign exchange (FX) rate forecasting is a challenging area of study. Various linear and nonlinear methods have been used to forecast FX rates. As the currency data are nonlinear and highly correlated, forecasting through nonlinear dynamical systems is becoming more relevant. The k-nearest neighbor (k-NN) algorithm is one of the most commonly used nonlinear pattern recognition and forecasting methods that outperforms the available linear forecasting methods for the high frequency foreign exchange data. As the k neighbors are selected according to a distance function, the choice of distance plays a key role in the k-NN procedure. The time series forecasting method, Auto Regressive Integrated Moving Average process (ARIMA) is considered as one of the superior forecasting method for time series data. In this work, we compare the performances of Mahalanobis distance based k-NN forecasting procedure with the traditional ARIMA based forecasting method. In addition, the forecasts were transformed into a technical trading strategy to create buy and sell signals. The two methods were evaluated for their forecasting accuracy and trading performances. (Received September 20, 2016)