Abstract

The use of crude oil is so wide as one of the world's major commodity traded internationally. Crude oil prices on certain conditions has rate of increase and decrease fluctuated. Rise and fall of crude oil prices will result in an impact on exporting countries and importing countries in terms of inflation, stock prices, and interest rates. Characteristics of such crude oil prices causing needed a method or a prediction system which is able to predict fluctuations in the price of crude oil.

The technique proposed in this final project is to use Elman Recurrent Neural Network (ERNN). ERNN have feedback loops so as to study the time dependencies of the training data and predict the upcoming data using test data. Although very good ERNN applied to the case of time series forecasting, ERNN have weaknesses in determining the structure and optimal network weights. To overcome the weaknesses ERNN in determining the optimal weights is used Firefly Algorithm (FA).

The prediction system uses historical data of crude oil prices from January 1986 to December 2011. This system has an error NMSE of 1,613.

***Keywords**: Crude Oil Price, Time Series, Elman Recurrent Neural Network (ERNN), Firefly Algorithm (FA).*