Abstract

Time series forecasting allows an organization to model a complex system and predict its behaviour based only on past data. An accurate prediction leads to strategic advantages that may become the key success of an organization. An alternative method in time series forecasting is by using artificial neural network (ANN). A common problem in time series forecasting using ANN is its high freedom degree in modeling. One of alternative solution to this problem is by using evolutionary algorithm (EA) in ANN modeling.

Among many kinds of ANN available, there is an ANN called product unit neural network (PUNN) which uses multiplicative nodes as an alternative to additive nodes. PUNN has been successfully implemented in classification [12], regression [14], and prediction [13] problems. Theoritically, PUNN also possible to be applied in time series forecasting as it has an abillity as a good universal approximator [14].

This Final Project proposed a time series forecasting method using PUNN which architecture and weights are trained using EA. In a comparative study with naive method and auto-regressive moving average (ARMA), PUNN shown better forecast results in most benchmark data. Thus, PUNN can be used as an alternative method in time series forecasting.

Keywords: *time series forecasting, product unit neural network, evolutionary algorithm.*