ABSTRACT

Growth and quality of crops depends on several factors, one of them is a environmental factor. Soil is one of the environmental factors closely related to rainfall because the water as a carrier of nutrients from the soil to the roots and then continued in the process of photosynthesis. This is the reason why the prediction of rainfall are noteworthy.

For this final project, applied methods of forecasting of Simple Moving Average (SMA) and to build a hybrid system used Artificial Neural Network (ANN) and algorithms of Evolutionary Programming (EP).

Moving average is a method of forecasting the function of smoothing the data to estimate the trend cycle (tendency). However, keep in mind is that not all the data is good, if too smooth. This is because there will tend to lose information. At the end of this task, use the method SMA with 3-MA and 5-MA. Better accuracy will indicate which method is better to process the data in this final project.

Evolving ANN is an evolutionary system that incorporates Artificial Neural Network (ANN) and algorithms Evolutionary Algorithm (EAs) which is one of the algorithm is Evolutionary Programming (EP). Unlike the other Eas algorithms, EP using mutations as genetic recombination operator or it could be said that the only process to produce a new chromosome. This is what makes the advantages of EP to evolve ANN.

To get optimal ANN architecture and weights are raised 20000 individual solutions with a combination of 50 population size and 400 generation with an average accuracy of training and testing of 79.24% on the architecture of 3-1-1 3-MA method. As for the 5-MA resulted in an average accuracy of 78.45% in the 5-2-1 architecture.

Keyword : time series, moving average, ANN, Evolutionary Algorithm, Evolutionary Programming