Abstract

Backpropagation is a training algorithm which used in Artificial Neural Network (ANN). Basically Backpropagation training algorithm will move the weight on negative gradient direction which make fitness function drop quickly. Nevertheless, process of Backpropagatin training algorithm standart work slowly. To speed up the training process there are two alternative ways, the first is heuristic technique and the second is optimation numeric technique.

In this final project, Conjugate Gradient Fletcher Reeves(CGF) algorithm will be used as algorithm in ANN training Backpropagation for forcasting temperature and air humadity system. Using this CGF algorithm, hopefully can enhance the system's performance, CGF is one of optimation method that minimaze a function, where the search directions are constructed by its conjugation and orthogonal values. Because the orthogonal direction, CGF can be convergence to the solution.

Based on the output of the test results obtained with satisfying results, the percentage error has decreased and speed of the training process has increased when compared to the Standart Backpropagation of ANN. On the H+5 prediction result percentage error has decreased, for the prediction of air temperature from 2,7% to 2,6% and for the prediction of air humidity from 10,1% to 5,6%. Later, the speed of training process has increased, for the training on air temperature data from 1000 epoch within 20.24 seconds to 19 epoch within 0.5 seconds and for the training process on the data of air humidity from 96 epoch within 1.79 seconds to 27 epoch within 0.58 seconds.

Kata kunci: Conjugate Gradient Fletcher Reeves, Artificial Neural Network, Backpropagation, Temperatur Udara, Kelembaban Udara, Forecasting