

Abstract

Weather is a state of air or atmosphere in a relatively narrow region and has a short period of time with the main parameters of the components are temperature, rainfall, length of radiation, air pressure, wind speed, and humidity. The weather is an issue that is still being experienced by the community, especially in weather forecasting. As the increasing desire of peoples to be able to know the weather conditions in the future accurately, many researchers continues to expand research on weather forecasting until now. Many statistical methods and Artificial Intelligent has been used for weather forecasting research based on Time Series data to be able to determine the pattern of historical data to forecast weather conditions for the future.

In this final project utilizing methods of Evolutionary Computation(EC) algorithm using grammatical evolution (GE) with are presentation of Backus Naur Form(BNF) to forecast weather parameters. GE has ability to provide a solutions in a function forms both linear and non linier. Data taken from climate BMKG Jakarta Kemayoran that later will used by GE algorithm to produce the optimal parameters for weather forecasting in Jakarta.

Grammatical Evolution algorithms specified by BNF gives quite good results accuracy value and worth for temperature forecasting one day to seven days a head with the accuracy range from 80% to 87%, where as the wind speed forecasting one day to seven days a head produce fairly good accuracy the value and worth, 83% to 86%. For humidity forecasting accuracy is quite good value and worth only for one day is forecasting, 81%. While for air pressure forecasting produces a fairly good accuracy the value and worth only for one day, it is 85%. For rain fall forecasting has bad accuracy values and unfit for forecasting one day to seven day a head with 65% accuracy values so the function result is not suitable to be used for rainfall forecasting. For length of radiation,still have bad accuracy and not worth,the value of the accuracy range from 11% to 17%, so the function result is not suitable to be used for length of radiation forecasting.

Keywords: Forecasting, time series data, Evolutionary Computation (EC), Grammatical Evolution(GE)