AN APPLICATION OF TIME SERIES ANALYSIS FOR WEATHER FORECASTING

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Abstract - Weather forecasting has become an important field of research in the last few decades. In most of the cases the researcher had attempted to establish a linear relationship between the input weather data and the corresponding target data. But with the discovery of nonlinearity in the nature of weather data, the focus has shifted towards the nonlinear prediction of the weather data. The advent of new satellite imaging technologies has made satellite images more accessible. These images can be utilized for weather predictions. This work proposes a simple approach for weather prediction that relies on satellite images and weather data as inputs. The method is divided into two parts. The first part involves the use of image processing techniques such as image segmentation on the satellite images to extract the cloud cover. On basis of the cloud cover obtained, percentage cloud cover is calculated and this calculated percentage value is stored, which is later used in the second stage of the approach. The second part involves the use of the cloud cover percentage along with other inputs such as temperature, humidity and wind speed to train an artificial neural network. The weather prediction is done by artificial neural networks. Most of the current cloud extraction algorithms are quite complicated to implement and execution time is potentially slow. In this paper, we present a novel approach which is simple to implement, fast in execution and provides good results in tests.

Keywords*-Satellite Images, Image Processing, Artificial Neural Networks*