Weather Forecast Warning System using Big Data and Naive Bayes Classification Algorithm

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ABSTRACT

Weather prediction is the application of technology to predict the weather for a given location based on historical or current data as applicable. The study of changes in the weather is necessary to get numerous advantages such as saving lives, conquering risk, intensifying profits and quality of weather-based life, etc. To forecast weather, we need to analyze huge amounts of data.Huge Data helps in getting, handling and breaking down a lot of heterogeneous information from applications to infer important results. Using traditional methods to analyze the huge data has become very resource dependent. Hence big data is used in this research as a prime methodology that provides many leads for forthcoming natural disasters like heavy rainfall, thunder, tornadoes, tsunamis, etc. in advance. This research focuses on predicting the weather for a given location based on temperature, humidity and air pressure by using the data recorded from sites around it and uses a novel approach, which combines several important factors of weather data to enhance the prediction rate.

Keywords: Big Data, Weather forecasting, Map Reduce, Naive Bayes classification

1. INTRODUCTION

Weather is the most critical for human in many aspects of life. The monitoring and forecasting of how weather temperature evolves over time in some location in the world can be beneficial for several predictions. It's difficult to process large quantum of weather data [8] in traditional data management tools as the complexity increases with increase in size of the data. In the traditional data management method, the large quantum of data [1] collected to forecast the weather may have many duplicate copies, thus makes the system complicated. The data collected from various sources are not clear in some situation. Metrological departments use different types of sensors such as temperature, humidity to get the data. And thus, processing of the data [1] in each of sensor makes it time consuming and complex.

Big Data is used to describe a collection of data that is huge in size and yet growing exponentially with time. The specific requirements for performing analysis on Big Data, a step-by-step methodology is needed to organize the activities and tasks involved with acquiring, processing, analyzing and repurposing data [8]. The existing weather monitoring systems have been developed using only micro controller devices in the past. These systems were failed to handle huge volume of data and this is the major drawback of the existing system. In our proposed research we have introduced big data which is capable of handling huge volume of structured, semi structured and unstructured data.