Estimation of Solar Radiation for Thiruvallur Region Based on Historical Data

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Abstract: Solar energy which is the main objective of living and non-living things it has a source of energy and radiation that is mainly useful. Solar radiation has a major role as a controller and a regulator of development and growth of plants. The framework was started with the statement that exist several different patterns in the stochastic module such as different seasons, weather conditions and other factors of the solar radiation series. In this paper we are analyzing crop data by using Hadoop tool. And also using familiar hadoop frameworks like sqoop, hive, hdfs and pig. To observe the crop base season time while crossing each month at major cropping ranges which can be brought into several years and implemented them.

Index Terms – **Crop range, solar radiation**

I. INTRODUCTION

The sun is a primary source which produces some energy said to solar energy, it is about billions of years ago. It is the basic need for the contemporary life [4]. Solar energy is the energy from undeletable source. The quantification of the emission from the suitable crop is the main impact of the analysis for providing the sustainable growth of the agriculture field. It also not only contains radiation value, which also have pest, soil type and some climatic factors that depend on the type of crop.

To uncover the pattern it makes the breaking of solar series and combined them into another forms. For all the respective collection, a declaration model was sustain to implement same sort of arrangement. In this finding the appropriate pattern which is more important. Thus the methods for recognition of instruction was proceed to find suitable series generation of crops belonged on it.

Then the proposed framework was compared with patent such as splitting the data movement and average model and time delay. The comparative results showed that the proposed framework provide better performance than other techniques. To predict solar radiation using various climatic parameters through linear and non-linear types with input model [4, 5]. This type of crop enhancement is appropriate to time series prediction.

II. CHARACTERISTICS

Solar radiation contains heat and light energy from the sun which can be helpful for providing the sun which can be helpful for providing photosynthesis, electricity like solar water heater and also it saves the electric power

In the photosynthesis, solar energy is transformed into some energy which can be used by the plants it makes fossil fuels. Solar energy can be used an industrial and agriculture also in many other fields to develop the profit. It is the amount of sun's receiving electromagnetic radiation per unit area, it is calculated on the outside the surface of atmosphere in an artic raft perpendicular to the rays.

III. FEATURES

Solar energy is easily feasible and it can be accessed to reduce the harmful effects. By some analysis is to evaluate the basic ingredients of the solar radiation. However, it is quite difficult to find the accurate but it can determine the appropriate one. This output will be beneficial for the farmers to cultivate the crops and to get more valuable fields by using different parameters such as temperature, pressure and humidity. With the use of these kind of tools there is no obstruction of details and no facts misplacing issue was there and also we can get maintaining cost and high throughput also very less [5]. It is compatible in all the platforms.

IV. FRAMEWORK METHODOLOGY

The main objective is to aid the cultivation researches by providing the information related to the agriculture. The data is created from various experimental analysis. In that analyze of solar data which will get the optimum output based on the user basis, preprocessing solar radiation. Limitation of a particular statistical structure to a percentage of valid instance data [1].

In this module, analyze the data with different kinds of fields make it like a file and moved to MYSQL backup. Then the use can retrieve the details through sqoop and stored in fields. We are analyzing crop data by using Hadoop tool [7]. And also using familiar hadoop frameworks like map reduce, sqoop, hive, hdfs and pig.

Using programming language it can perform various operations to produce output according to queries open user requirements.

V. MODULE DESCRIPTION

In the analysis the requirements serve as the basis for implementation of the system and should therefore be a complete and consistent of the whole system of 4GB RAM and processor of Intel. This model emphasizes the cluster of CPUs in improving the speed and efficiency which have been developed [2]. Data is collected from agriculture websites. After feature extraction dataset contains suitable crop list. The goal of the study was to analyze how much number of crops had grown with the help of solar radiation as on previous year.

A java programming language it can be used to develop an IDE eclipse. Let us see the process in which whatever data analyzation done to be stores in hadoop distributed file system by different types of styles like hive, pig and map reduce. The client reviews with analyze of solar radiation data which will be easy to predicate. Sometimes, this is indeed the case while at other time is reasonable abstraction.

In which it concludes with analyze of solar radiation data, with different techniques and predictions are done those data started in HDFS [6]. They proceeding with hadoop ecosystem at backend processing tool and another popular techniques also used that is an map reduce algorithm which can easily done in parallel approach. The map reduce methodology has two main divisions such as mapping and reduce [6].

It will divides the data into a set and maps them in an order and reduce it finally. Sqoop is a tool designed to transfer data between hadoop and relational database servers. It performs two operations Import and Export. In Import the records starred as text data in files, where as in export the file given as input to sqoop contain records. Those are read and parsed into a set of records and delimited with the specifications.
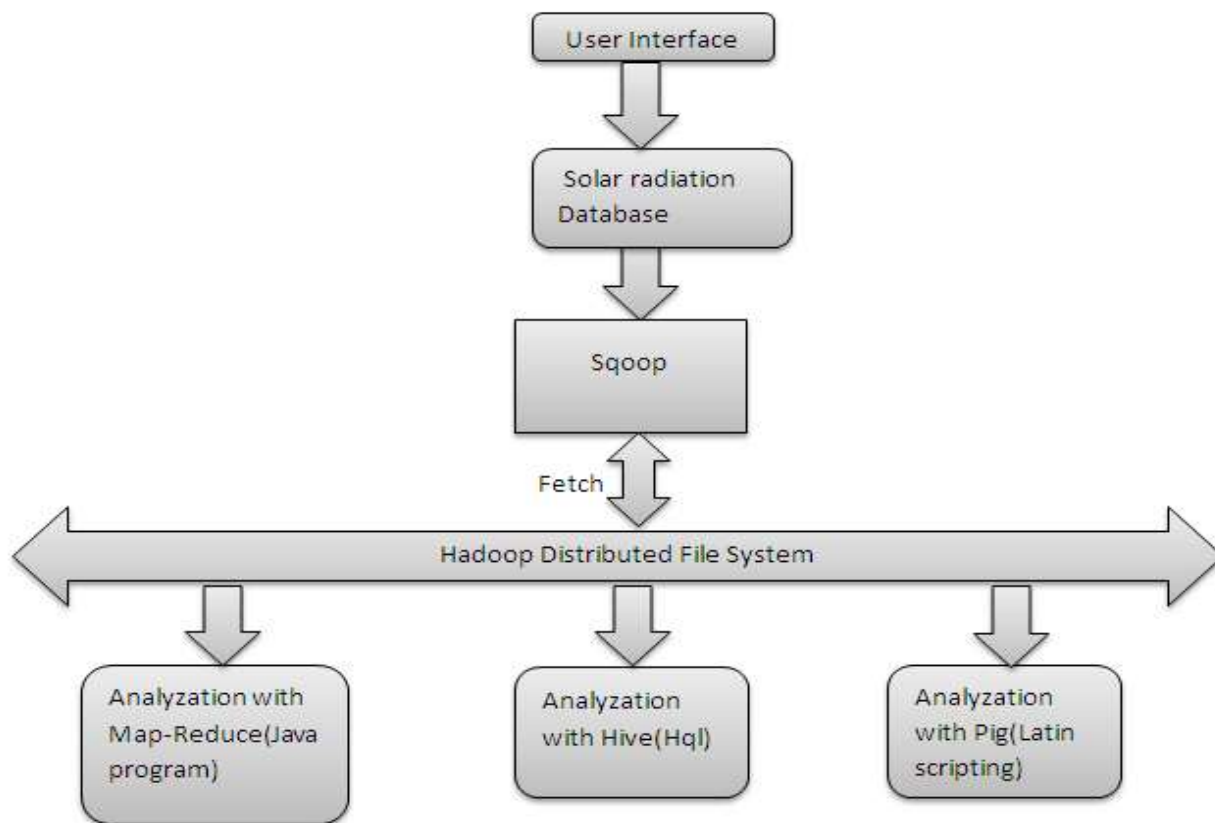

VI. ANALYZE QUERY

In this module, analyzing the data with different kinds of fields and converted into comma delimited format which is said to be csv (comma separator value) file the data is fetched in Hdfs and saved in a csv file keep up by hive and moved to MYSQL backup through database [3]. The user takes MYSQL data into software tool by fetching the data through sqoop and store in hdfs. Using hive query language it can be analyzed in different functions like portioning, bucketing, in structure table and produce in console output according to queries and analyzing it [10]. Though the using hive query language it can be analyzed in different functions are of those to analyze the report based on the activities of the user approach. Hence there is demands on available energy data. The climate changing models

represents the province solar radiation, it is more difficult to the radiation data set whereas the temperature which is one of the easily obtained framework variable [10]. It will be more useful to predict based on the radiation rather than any other climatic parameter. So that the crops it could be well grown for a particular period will be find.

There are many human beneficial activities are taken such as irrigation, greenhouse effect, Rainwater harvesting these are also indirectly depends on the radiation. But due to high establishment facility these premises station are still sufficient and scanty. They improved factual and analyzing prototype to produce vital specification about soil type, pest humidity temperature and crop features [9].

HDFS Architecture
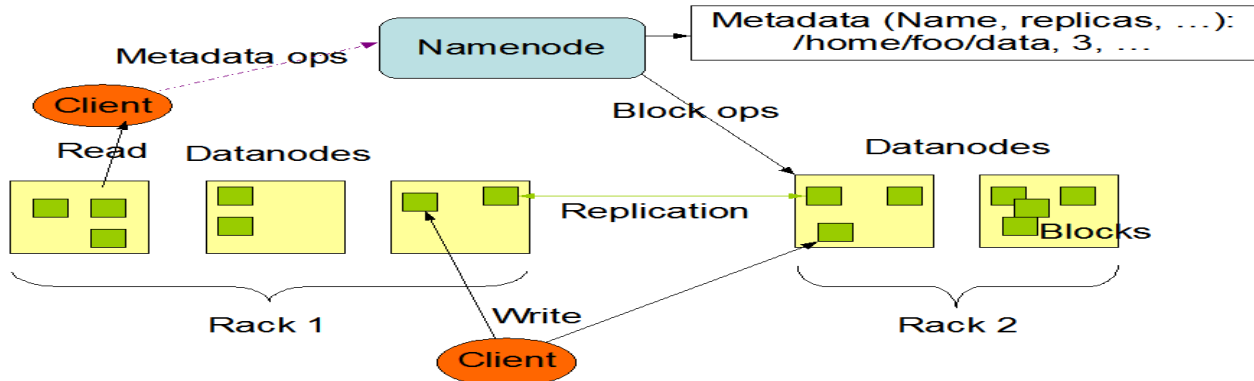
VII. SCRIPTING PROCESS

Using pig scripting especially said to be another easy tool in which more and more analytic can be done by unknown programmer also. Create relational table and store the data in hdfs. The data which is available in hdfs so while processing the data first internally it will goes to mapper then sorting and shuffling of data will happened and this intermediate data will going to pass to the reducer and internally combiner will combine the data of key and value data and finally it will going to pass to the hdfs for storage purpose.
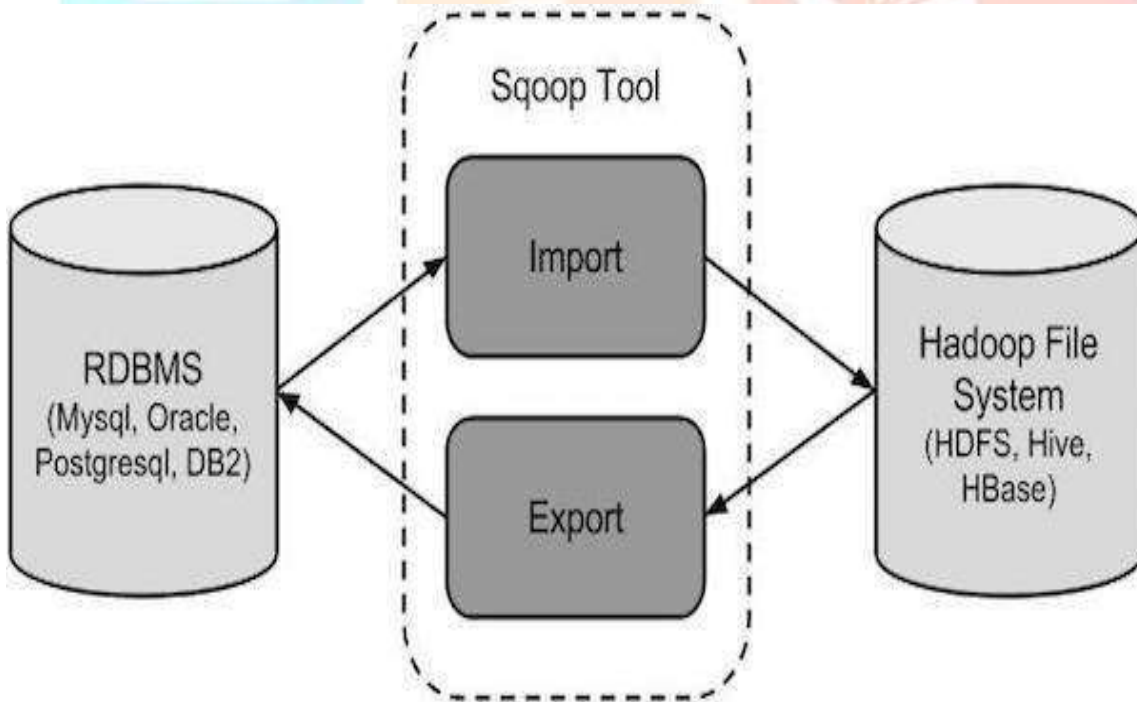
It can comprises system components, this internally works in the form of java code, that will work together to implement the overall system for large data handling processing and cost is less. A unified modeling language, has its own specification designing process over a particular period. There are different types of solar data well plays according to soil erosion, while something in peak seasons due to none rainfall the crops may not grow adequately so sufficient rays also affects the crops. We can research them with historical data how much of the solar gets according to seasonal.

By using this can bring the data in a fast mode from the large number of data storage. The analysis of the operational performance verified that it is possible to cover all rows in a field without time-consuming.

VIII. FUTURE ENHANCEMENT

Hadoop is a revealed informant reported in a programming language which also overseen that can converts the large amount data into smaller across clusters using some of the simpler modules. The village administrative officers able to find issues behind the solar radiation growth and also for which of the reasons with the help of big data analytic report. We also use spark implementation for 100 times faster further.

We are using spark we can get result hundred times faster than hadoop [8]. This is due to that it runs in memory on the cluster. A visionary frame of reference for inquiry was improved it will be useful for researches.

IX. RESULT

Thus we perceived a crop list based on solar radiation information by performing real time data backup hardly taken two years of data. The speed of processing a fast because of the advancement of big data analytics and it is mainly helpful for prediction purposes, which indicates to perform a proper maintenance. Based on this historical data which is useful for the researches to find which crop is suitable for the season and also in which year it gave more profit also mentioned. It also provides efficient data processing, there is no limitation of data.

Table 1: Descriptive Of Crops

Serial.no	Crops	Soil Type	Spacing	Pests	Sow Seeds	Month
1	Groundnut	Sandy loam	30cm	Termite	8cm	June
2	Wheat	Fertile Soils	15cm	Alphid	67cm	March
3	Cucumber	Fertile Soils	15cm	Alphid	60cm	December

X. ACKNOWLEDGMENT

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