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Deep Learning Based Forecast Weather and Crop Prediction for Agriculture Application

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ABSTRACT: Agriculture is important source of life. Many biological patterns and patterns seasonal influence crop production but unpredictable changes may cause a big loss to the farmers. As the effects of weather change on agriculture become more apparent, the importance of tracking changing weather conditions will be of paramount importance. Flexible and scalable processes for data analysis and crop yielding, particularly image and data are an important part of how we track and respond to changing environment. These can reduce risks while performing data-related work with approaches like soil type, temperature, humidity, atmospheric pressure and crop type. Using Estimation of yield and Random Support Vector Regression (RSVR) algorithm were done using process tool constructed by MATLAB (software). It can be used for estimating the yield of any crop. The scalable storage has provided major factors for assessing and calculating the results. The challenges has been to extract knowledge from this raw data this may led to new techniques and methods such as data mining that can bridge the knowledge of the data to the crop yield estimation. This represents a review of the various like crop yield, weather, and crop cost forecast are used.

KEYWORDS: Support Vector regression (SVR), Data mining, Deep leaning, Deep Convolutional Neural Network (DCNN).

I. INTRODUCTION

India today rank is second, worldwide in average annual agricultural result. Agriculture sectors like fisheries accounted and agro - forestry for 16.65% of the GDP in 2009 along with 50Agricultural Fertility of soils is identified by various macro and micro nutrients available in the soil. The Panchganga river basin, well agriculturally developed and watered region covers 45753.2 sq. km area and supports 26, 11,547 (2.65% of state) population. The index values of N, P & K are collected from central government soil survey and soil testing Laboratory. These index values of N. K. & P are grouped into six categories and tehsil wise areas in percentage in concern category are calculate. To recognized the fertility level of the soil's compositeindex is computed with the help of NPK values and is grouped into five groups. In Kolhapur district, there is a huge variation in the distribution of macro nutrients of the soil. It is observed that most of the areas of the study area are fertile in nature and low and very low fertility of soil is noted in some pockets only. The physiography, agricultural activities and weather have greatly influenced the nutrient status of soil. Addition of organic matters and specific fertilizers are recommended for nutrients deficient areas it will help to keep the balance of

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nutrients and to restore the fertility of soils. While fieldwork, it is observed that the anthropogenic influences are degrading the soils in the area it needs further investigation.

II. PROPOSED WORK

Modern agriculture has the potential to find even more ways to conserve water, use energy and nutrients more efficiently and adapt to climate change.

A new training data set is originated from the actual data set with replacement. Then, more than one decision tree is grown using random forest algorithm. This strategy of producing decision tree with test result, it makes a better in accuracy when it is compared with other existing all algorithms.

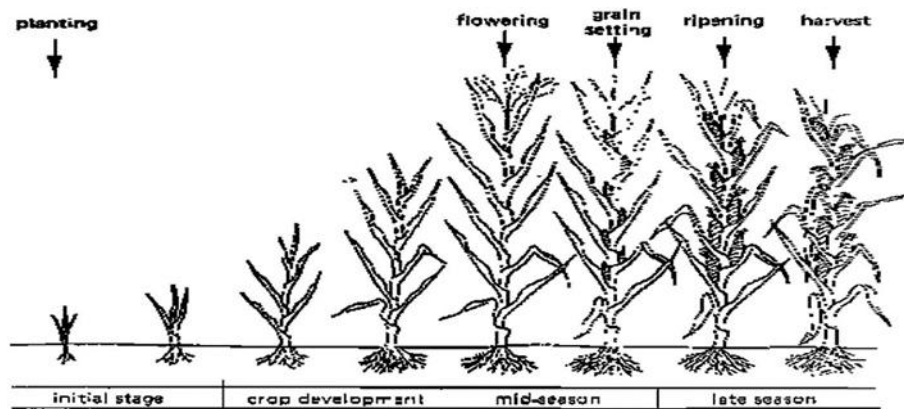


Fig (1) Crop Selection

CROP YIELD PREDICTION

Applying the data mining techniques on crop production data several predictions can be made on the knowledge gathered which in turn can help in increasing crop productivity. Support Vector regression (SVR) has to be implemented to prevent the overheads of decisions about the soil and crop to be cultivated. Decision Support System is a software system it helps the analysts to predict or identify useful information from a raw dataset, documents or business models to analyses and solve it by making decisions. The prediction system will be implemented by using data mining techniques. Challenging problems in Data Mining includes data Privacy, data purity, protection, inorganic and atmospheric problems, network environment issue, high cost, unbalanced and with various types of data.

WEATHER PREDICTION

Prediction of weather in advance can help the farmers and the Government bodies to plan for storage, selling, fixing minimum support price, importing and exporting of agriculture production. . The moisture content of the weather is the ratio between the current elastic amounts of steam that capable of being contained at a given period, that ability is temperature active. If the temperature is hot, the atmosphere is more likely to hold water in its vaporous state. If it were cold. Humidity is the mass of water vapour divided by the temperature of a volume of air at a given temperature, the hotter the air is, the more water it can contain.

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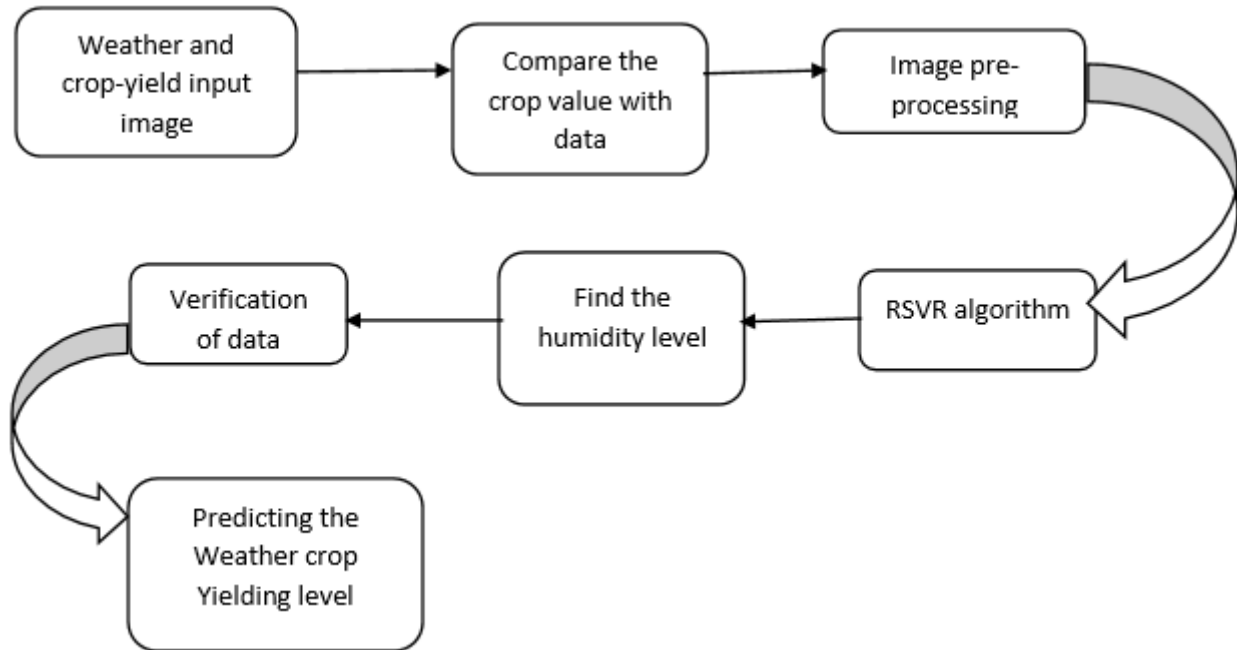


Fig (2) WEATHER CROP PREDICTION SYSTEM

III. EXPERIMENTAL RESULTS

Figure shows the results of weather and crop prediction from an given image. Initially the fresh data set was inserted by selecting from computer, then the parameters of weather like temperature, humidity, soil moisture, rain fall, ph value of soil are to be calculated by using future prediction algorithms to find the weather after certain period fig (3). After image processing of the given image, it will calculate like edgeRGBtoGrey and so on of the crop fig (4). Then it will find Random Support Vector Regression (RSVR) and the value of N, P & K by using algorithms like random forest algorithm and so on. By finding weather of atmosphere and growth of crop then compare to each other to make a decision to harvest or not.

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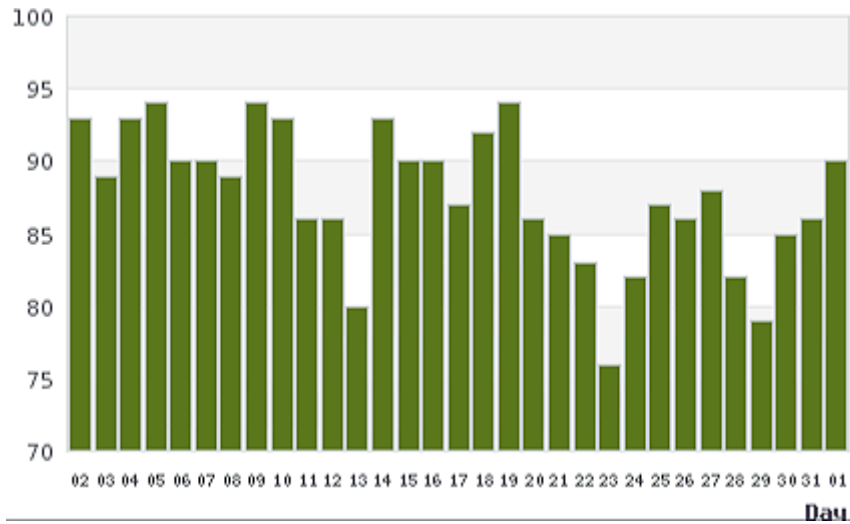


Fig (3) Weather prediction



Fig (4) Image processing of a crop

IV. CONCLUSION

In future, using latest technologies, processing time can be reduced. Our module customization capability has been enhanced, similarly the same method can be implemented using the Hadoop distributed file system if it is introduced in future. We can use the advanced feature selection algorithm to predict.

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Agriculture is the important application area mainly in developing countries. Data mining is used for large data in agriculture. The crop yield prediction is still remaining as a challenging problem for farmers, but the use of data mining techniques in the agricultural field it will create a decisions for mankind satisfactory conditions and with that achieving challenging improvement. The objective of this research is to implement a Random Support Vector Regression (RSVR) to predict the crop yield from the collection of past data. In this paper, Image Processing using MATLAB software is made for the smaller image datasets and found that the higher accuracy will be the rate for crop yield prediction. By making use of big datasets, one can improve the results. In future, one can understand that how these techniques can be used with complex and large agriculture datasets and can be used for crop yield prediction with both seasonally, non-seasonal and making the use of GIS technologies.

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