Interaction of Farmers with the Buyers

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ABSTRACT- Farmers are the pillar of any prosperous nation. They contribute towards the major part of the economy but still they are deprived of the profit they deserve. India is a land where farmers contribute to 50% of the work force and GDP contribution of agro products is 17 to 18 % countries overall growth. The world is driven by technologies like **Artificial Intelligence, Block chain, Data science, Web development**, etc. and this list is endless. With such a huge leaps and advancement in modern technologies still farmers suffer the most in boosting their productivity of their crops and maximizing their income. They are still in the clutches of middleman, Rich Farm land holders, vendors who are not allowing them to get the maximum profit of their food grains and exploiting them .This paper analysis the various technological aspects and focusses on overall growth of farmers in terms of providing them opportunities to interact directly with buyers, vendors, restaurants, local market retailers with use of website, mobile apps. Not only farmers are deprived of their original cost but the buyers also don't receive these products at fair price which sometimes leads to burden on them.

Keywords: [Farmers, technology, Profit, Smart farming, websites, Android apps, Machine Learning, Natural language processing, API]

INTRODUCTION

The overall growth of any nation takes place when there is equal share and contribution from all sectors of society. In 21st century technology is booming and connecting millions of people across the world. A smartphone devices have become such powerful that it can let your business grow from small market to a huge prosperous market. In terms of agricultural production activity of $375.61 billion, India stands on the second position for the largest producer of agriculture product. The total agriculture product output stands around 7.39 percent from India around the world. On the other part our neighboring nation china has contribution of $991 billion GDP in agriculture sector which is much more from India. Recent studies have revealed that fusion of agriculture and technology matter, and China is doing the right way. The use of artificial intelligence is one way that farmers are streamlining operations, increasing efficiency and ensuring sustainability."China has introduced a cloud-based agricultural intelligence which has aimed to help the farmers of china. This will lead to increase of their crop yield and help them to achieve income of (71,289.40 Indian rupee.)".The need of such sustainable development is also needed in India where farmers are the prime contributor for the development. They are the ones who are grow food grain and feed the society but still they don't get enough cost of their crops. Every day around 35 farmers give up their lives which is very embarrassing for our nation where slogans are given such as '**JAI JAWAN JAI KISHAN**'. We just need to make use of knowledge like machine learning, NLP, Deep Learning to make an application which has all integrated environment with all around development make use of these to grow the farm productivity. With the use of '**APP**' farmers can connect themselves to the buyers and sell directly their products, Similarly with the use of 'websites' it can be feasible for the governments to launch their schemes and make people aware about development things they are intending for . This initiative taken by government will help them to reduce huge production of excess food grains which results in wastage sometime and also ensure the food security for the country and give farmer a feeling of self pride and satisfaction. Lowering the ceiling increases profit, and with AI advancements and collaboration in other areas, this goal is becoming a reality. The basic idea of using these systems are connecting farmers directly to the buyers allowing them to sell the quality product at reasonable price to the buyer and also ensuring that the maker get the price they deserve. Majorities of farmers are smallholders living in rural areas and thus lack amenities which will give them **direct access to markets for their products** and also they are deprived of agriculture market information. Therefore farmers are exploited by these intermediaries who offer low prices for agriculture products. Over the next few years, the application of these technologies will greatly shape the way the country manufactures food and distributes it to the most valuable sector of the nation. The country is already well on its way.

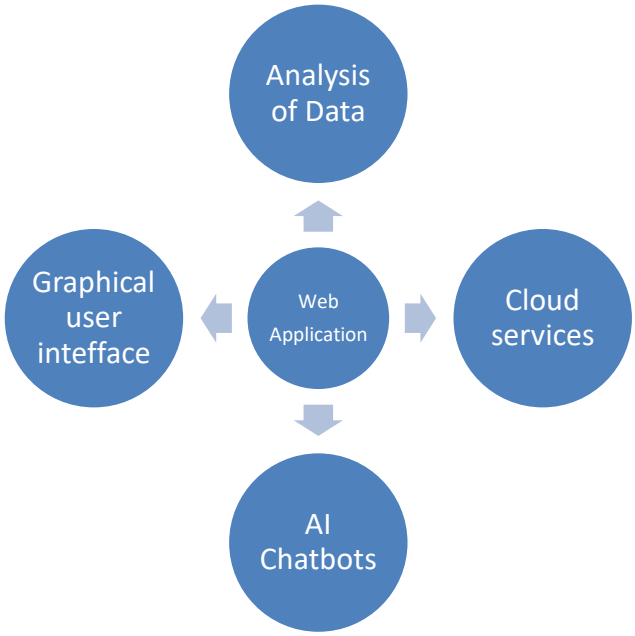
LITERATURE SURVEY

In India many attempts are made to improve the conditions of Indian farmers by the use of advance technologies. This would help the condition of farmers and farming. Studies are being carried to use implement E-farming with use of Artificial intelligence, cloud based technologies which will have a definite impact on the condition of farmers. It is proposed that there should be a web portal or android apps which would connect farmers to the buyer. These things

cannot be done individually by famers because farmers are not much educated so we also need special efforts from government and company professional in order to make famers aware of such existing platform.

IMPLEMENTATION

The system is formulated to improve farmers and buyer relation through an application based environment where famers can directly interact with buyers to sell their products. In this farmers will grow their product and upload the details of their products so that buyer will come to know about the availability of the products. We make use of an integrated system where there will be facility of getting information about various schemes offered by the state and central government, improving the crop condition through the use of **Augmented Reality** by capturing the picture of **land** and make farmer aware what crops he should grow in repeated interval of time. In this application farmers will also get information whether he needs to grow crops in bulk amount or small quantity. This system also has an **AI** based **Chatbot** system which will interact with famer in his native language. Once the buyer will come to know about the product he can interact with famer through mobile Phones or **SMS** based **system** and make famer aware that he is interested in buying his product.



This system not only enables farmer to sell their products but also provides opportunities for vendors, restaurant owners, courier man, delivery agent to get employability through this. We also intend to have a SMS facility for those farmers who cannot send their details through application.

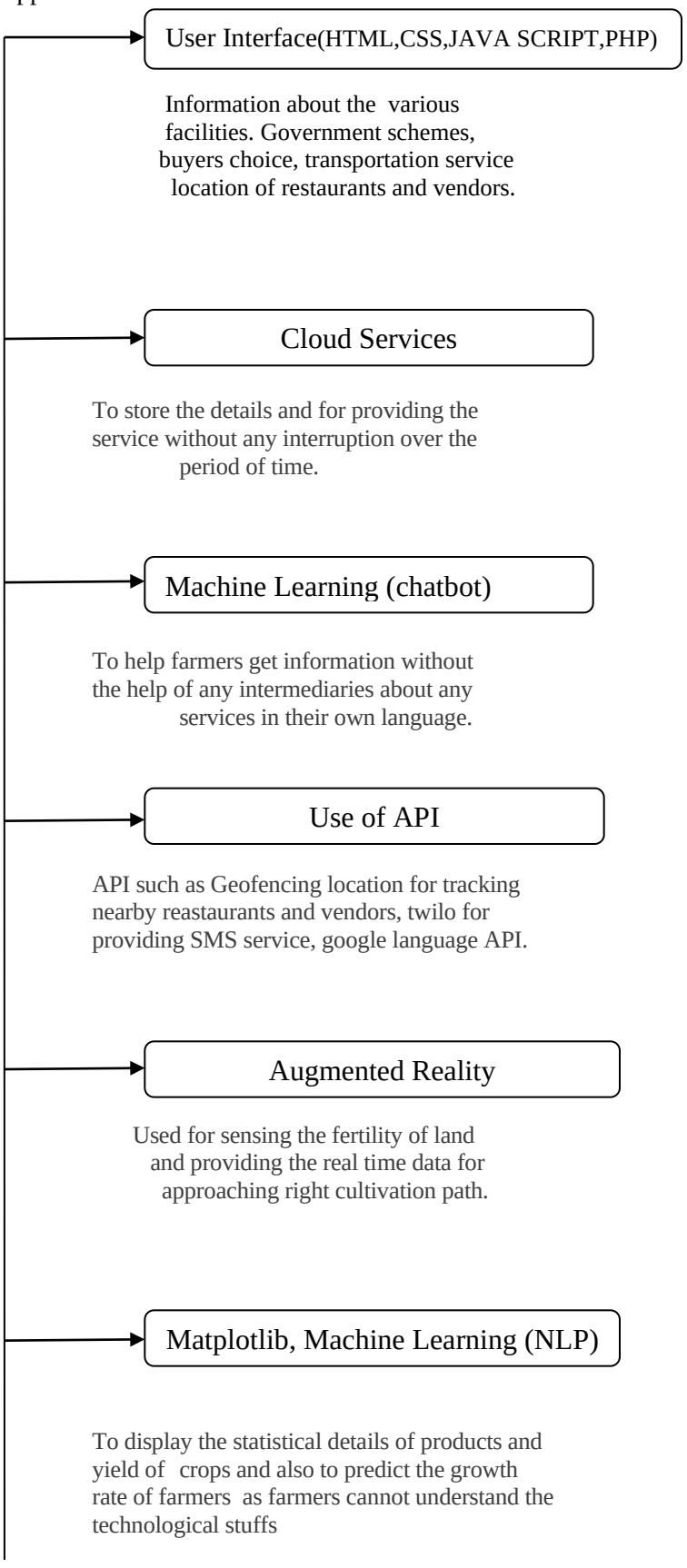
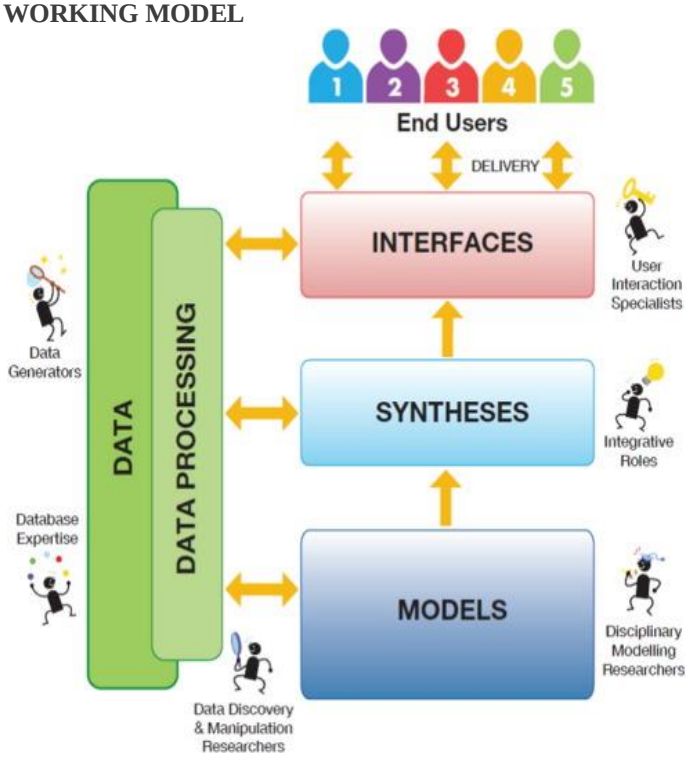


Fig A. Technology usage

WORKING MODEL



We consider to have a model where there will be preprocessing of data so that some useful insights can be carried out, These insights can be used to distinguish important features by government so that they can bring some major reform in their policy.

USE OF API

The working of API is such that it allows to monitor the services based on ones requirement. We would be able to fence the nearby region around farmers where he can go and sell his product. Also we have API called Twilo which is used for sending SMS to the farmers. GOOGLE language API is used to translate language of web application in their own language.

TWILO API

```
// Your Account SID and Auth Token from twilio.com/console
$account_sid = 'ACXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX';
$auth_token = 'your_auth_token';
// In production, these should be environment variables. E.g.:
//     $auth_token = $_ENV["TWILIO_AUTH_TOKEN"]

// A Twilio number you own with SMS capabilities
$twilio_number = "+15017122661";

$client = new Client($account_sid, $auth_token);
$client->messages->create(
  // Where to send a text message (your cell phone?)
  '+15558675310',
  array(
    'from' => $twilio_number,
    'body' => 'I sent this message in under 10 minutes!'
  )
```

USE OF AUGMENTED REALITY FOR CROP PREDICTION

Linear Regression (LR) is used to establish relationship between explanatory variables (AR, AUC, FPI) and the crop yield as response variable. R^2 value clearly shows that yield is mainly dependent on AR. AUC and FPI are the other two factors influencing the crop yield. This research can be extended by considering other factors like Minimum Support Price (MSP), Cost Price Index (CPI), Wholesale Price Index (WPI) etc. and their relationship with crop yield.

```
import pandas as pd
d={'ARHAR':1 ,'COTTON':2 , 'GRAM':3 , 'GROUNDNUT':4,'MAIZE':5,'MOONG':6,
df=pd.read_csv('datasetFINALdata.csv')
from sklearn.model_selection import train_test_split
X=df[['Climate' , 'Year']]
y=df['srno']
X_train , x_test , y_train , y_test=train_test_split(X,y,test_size=0.3)
from sklearn.linear_model import LinearRegression
lg=LinearRegression()
lg.fit(X_train , y_train)
lg.score(x_test , y_test)
x_test
y_test
c=lg.predict(x_test)
```

This is the basic functionality what is to be included for implementing this model considering all the technological variations.

AI POWERED CHATBOTS

An AI powered chatbots that can recognize the users need, collect different data from it and will be able to frequently asked questions and reply to it. Autopilots uses a task-driven programming model where tasks correspond to outcomes what users want through interaction with your bot. Some of the examples may be like making a call with buyer who has asked for his product, giving information about the market driven requirement products to be needed,etc. It uses natural language understanding(NLU) to detect what users are saying and match it to the appropriate task.

USE CASES

There are several existing model which is trying to solve the problems of the farmers but it is segregated into different parts, overall there exists no model which tries to cover entire problem in one application. Our studies revolves around scenario where we want a model which has all the features involving from security, connecting government agencies, involving the concept of crop prediction, real time monitoring of the services and most important a level of satisfaction from the farmers and buyers.

Various different types of existing solution available in the market such as E-Nam, Kisan Network, AgriApp, Kisan Yojana,etc.

These all application services are inclined in offering one of the services where the need of time is a web application which has all features incorporated in it.

DISCUSSION

Currently this system cannot be implemented directly by the farmers as they have lack of access to technologies. We need support from Non government agencies and professional who will help us to setup the centre in village areas and organize awareness program to make people aware. There is an need of such system in the market as the gap between urban and rural areas is widening up. The recent survey shows that people are less involving in agriculture works because they are not getting access to markets and most of the products cost are eaten up by intermediaries.

Agriculture is one of the activity which is done for feeding the large humanity but still if the makers are in trouble it is one of the saddest part of our society. Every year there are many farmers who give up their lives due to loss of crops, huge storage of produces also lead to wastages some time.

Farmers are not only the ones who suffer but the buyers too have to bear hefty cost of the vegetables, grains, etc. There is always a mismatch between the original price laid by the farmer and what a buyer pays. This system does not justifies to the equal share to be given to farmers and buyers.

FUTURE SCOPE

This system can be used a model which can be used to form an organization which will maintain all the ecosystem and ensure that this application is maintained and updated with growing technologies. We also would like to include advance security system based on Blockchain which can be use to link payment option with the buyers. There are also multiple things which can be included along with this model.

CONCLUSION

The study evolves around how can we help farmers with modern technologies and making them independent in terms of growing and selling. We want to incorporate technologies such as Artificial Intelligence for chatbots, NLP for deducting references from regression model, having a web application with features such as providing interface for getting information on different things. We would like to have collective support from all the working bodies I bringing up this model. This is not an individual task but as a whole society we need to implement this.

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