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RESEARCH ARTICLE

Krishi-Mitra: Expert System for Farmers

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Abstract — *In agricultural sector, farmers in rural areas faced major problems because of illiteracy. They cannot take the advantage of internet to access the information related to farming. The information represented in icons will help the farmers to take the important decisions. Also there will be additional benefit to farmer as there is speech based interaction in Indian language with icons. According to UNESCO report, 64% population in India cannot use the internet due to lack of technical knowledge. Here, we are extending the approach from computer devices to small mobile devices application.*

Keywords-- *Icons, Agriculture, Farming*

I. INTRODUCTION

In today's rapid changing world of internet we focused on the people especially from the rural areas .The main Aim behind this is that the people in rural areas are far away from internet technology.so, in order to get all the information about agriculture collectively, we have developed a Website and an Application which will help the farmer in many ways.

In our system, we have made such an interface which can be accessed by semi-illiterate people. Also; there are options of Marathi as well as English language. So, That if any farmer is English illiterate he can get the information in Marathi through one more advantage of Krishi-Mitra Website is that for registered user there is FAQ's facility and also he can type his Queries, which will resolved in specific duration. In spite of this, if any farmer faces difficulty in accessing the our Krishi-Mitra Website he can use Krishi-Mitra Application which contains iconic based interface as well as information in speech format i.e. audio clip. Also, if he has some other queries, he can directly contact to expert calling.

The rest of the paper is organized as follows. The proposed approach is elaborated in Section III. Section IV provides the system implementation details. The user testing results are discussed in Section V. Finally, Section VI concludes the paper with the future directions of the research.

Thus, we not only provide information but also farmers will be motivated to access the information.

LITERATURE SURVEY

During the survey, we referred many papers. That was beneficial only for small scale or for few farmers .out of all papers survey we specially focused on how semi-illiterate people understand the information of agriculture.

We referred the paper "Krishi-Bharati: An Interface For Indian Farmers". This paper gave the idea about how the users interact with system through icons and results back with agriculture information in Marathi as well in English text according to user. To access the agricultural information from internet, users have to form the proper query and got the result from the website admin or expert.

We referred another paper “Expert system Design and Architecture for farming sector “.It gave the idea about how to choose the appropriate crop by analyzing the soil quality. Based on the soil quality, it chooses the appropriate crop. it also gave the big factor the weather forecast and the general pattern of weather for that region.

We refer the paper “development of Multimodal Interface to Internet for common people”. It gave the idea about how the user can interact to the internet with three modes: text, speech and icon.

We refer the paper “Multilingual information framework for handling textual data in digital media”. These documents describe the multilingual data across a wide range of possible applications in the translation process within several multimedia domains.

II. SYSTEM APPROACH

Our System is defined in the way the application developed can be maximum utilized. This product is intended to use for fast and updated information delivering system for farmers.

Also we intend to use native language support to understand and voice help for certain modules so that farmers or personnel who are not aware with English can also utilize the features provides by application.

So project scope can be summarized as:-

- Fast and efficient support for newer information available
- Weather reports according to position of the user
- Read out loud functionality for specific modules
- Call to expertise on single click of button.

Users in Application are:

Network Admin: Root user for the entire infrastructure.

Scope: Access to all database instances within the service provider domain, access to all tenants.

End user: End consumer. Regular user without any administration privileges. Can use resources, see application infra, but cannot perform tasks outside privilege scope.

Scope: Very limited scope down to the application level access.

Operating Environment:

This product is web-based and android environment working and will be hosted by a Web server. It can be viewed by any android device compatible with minimum SDK6 defined. The web service will work on Microsoft Environment only supported by .net framework.

Design and Implementation Constraints:

It is limited to work on Android Environment only.

Device requires android version 4.0.1 (Ice-cream sandwich) or above.

Server System must have .Net framework.

System requires SQL Server 2008 installed on the server system which is very vital to maintain integrity of database.

Assumptions and Dependencies

1. The users must be aware of computer hardware and their different attributes.
2. The user must have basic knowledge of computer and operating system.
3. The user must have basic knowledge of android operating environment.
4. Application development requires a good knowledge of operating systems and WMI architecture of windows.
5. Application developer must have good knowledge of eclipse framework and web services interaction.
6. For application, the users should be aware of C# language and basic database operations
7. The computer in which this application is to be installed should be compatible with .Net Framework.
8. The computer in which the application is to be developed should be compatible with jdk and java 1.6 at least.

Advantages

- I. Low or no start up costs.
- II. Great flexibility in relation to fast up and down scaling of resource needs.
- III. Easier access to new versions.

- IV. Other common outsourcing advantages like security for uptime, availability, Contingency, Arrangements, reduced costs of investment in organizations infrastructure.
- V. Encryption methodologies for secure and fast communication.
- VI. Voice over technique can be beneficial to the personnel even if he/she can't read the Information.
- VII. Weather updates can be arranged to change after some specific duration so latest updates can be fetched.
- VIII. Native language support has been provided wherever required and possible.

III. KRISHI-MITRA INTERFACE IMPLETATION

A. Website Based Interface-

The methodology discussed above in system approach for website is implemented in visual studio 2012 with c# coding.

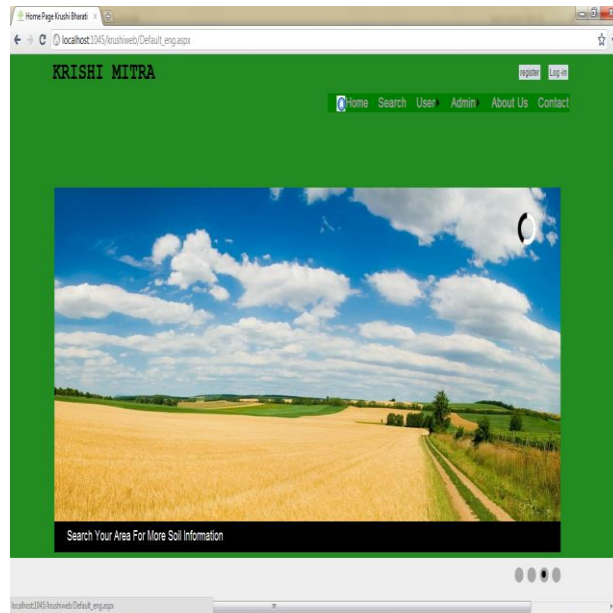


Fig 1. Home page of Krishi-Mitra Website

In krishi-Mitra website user search crops, their methods of cultivation, related diseases and their prevention according to the region. fig.2 shows the region wise information of crops.

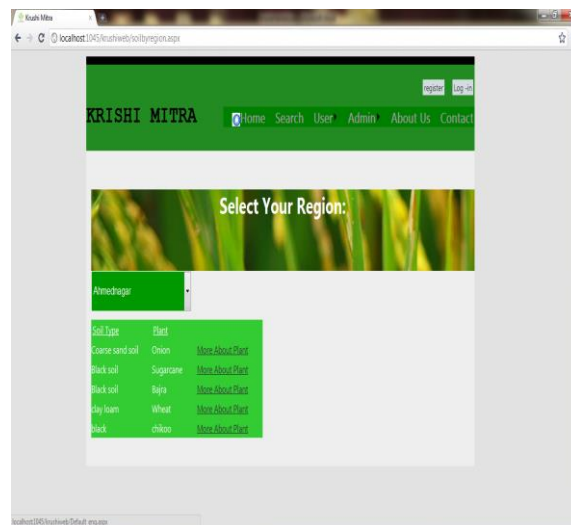


Fig. 2. Selection of Region

To get the more information about selected crop or information in form of pdf form just user have to click on “more about plant” and he get information in pdf.

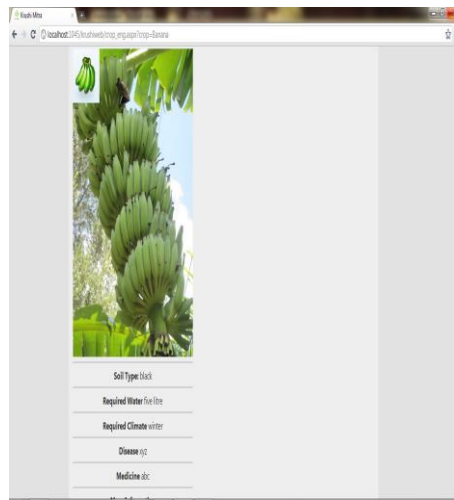


Fig 3: More information of plant

B. Application Based Interface-

The methodology discussed above in system approach for an application is implemented in visual studio 2012, Eclipse LUNA with Java coding.

Fig. 4 shows the contents of our Krishi-Mitra Application start screen.

Start screen has following contents:

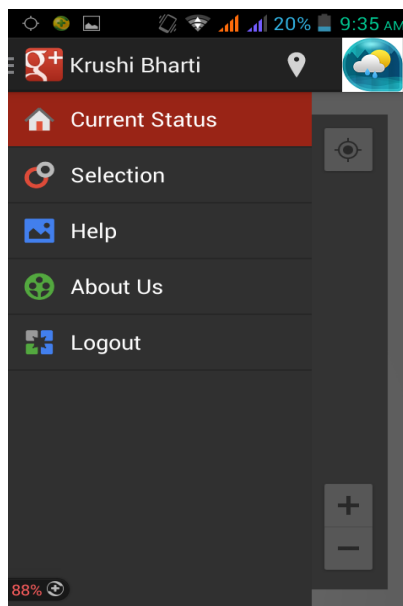


Fig 4. Start Screen Of an application

In Application user get weather information i.e. temperature in Celsius and humidity in percentage, pressure in Pascal.

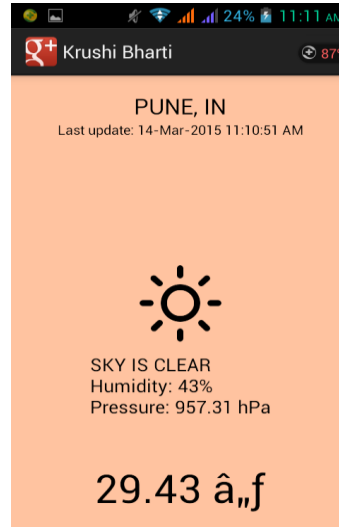


Fig 5. Weather Status

IV. CONCLUSION AND FUTURE WORK

The Krishi-Mitra website gives the whole information regarding to crops, Weather status and also user can get the expert advice in Marathi and in English languages.

Krishi-Mitra application can be used as smart system which will be more sophisticatedly working for benefit of the user. A user can be made aware about current weather statistics and new information regarding to crops, seeds, fertilizer etc just on single click of a button. He can even consult with experts if needed. This application can be very much helpful even if one could not read the information on the device by native language support provided in it.

This model will be a great enhancement to currently using techniques.

In this way this Krishi-Mitra expert system for farmers reaches towards the implementation. Hence, difficulties faced by farmers in farming are overcome and resolved.

Future scope for this system will be more native language support and dynamic query resolution. Also, downloading various data and information provided by experts will be possible through the application.

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