Farm Friendly Chat Bot

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Abstract: *This study presents the development of a chat room and a chatbot designed to facilitate discussions on prevalent farming issues among peers and experts. Its primary aim is to provide timely support to farmers in making informed decisions about their farming practices. To create a structured framework for these conversations, a standardized set of questions was formulated through consultations and surveys involving farmers, experts, and other stakeholders. The questions were analyzed to extract 'intents,' representing the specific information or assistance users might seek, and 'examples,' which are concrete instances users provide to express their particular intent. Additionally, 'entities' were identified to represent distinct objects or concepts related to these intents. The model was trained using the Artificial Intelligence Markup Language (AIML) to predict the intent based on the provided examples. This training process enhances the chatbot's ability to understand and respond to user queries effectively. Furthermore, the chatbot was deployed on a cloud platform, reducing the computational resources required on the client end. This approach ensures accessibility and usability for a broader user base without significant hardware constraints.*

Keywords: Chat-Bot, Agriculture, Chat-room, Artificial Intelligence, Farming Industry, intents, examples

I. INTRODUCTION

The agricultural sector has been the mainstay of the Sri Lankan economy over the past centuries and currently, the sector contributes 7.5% for the national Gross Domestic Product (GDP) of Sri Lanka and provides employments for 80% of the rural community of Sri Lanka. Agriculture by products are raw materials for the other industries, which earns foreign exchange. In Sri Lanka the agriculture industry is dominated by small-scale farmers, whose farming range is from 0.3 to 0.5 hectares. However, farming becomes less profitable industry in Sri Lanka and there is a trend that the small-scale farming community is leaving from farming. There are many reasons for less attraction on farming. Among them lack of the knowledge on modern technologies of farming is a major problem faced by the rural community. Information is key for knowledge gain on farming and hence, information is a valuable resources for rural development (Carter, 1999; Meyer, 2003; Morrow et al., 2002) and can assist small-scale farmers in making timely decisions and taking appropriate actions. Marchionini (1995) emphasizes that people need to change the state of their knowledge to access. Information is recognized as a vital resource for fostering socio-economic development, as it empowers individuals to make well-informed choices that can lead to improved livelihoods. Kalusopa (2005) highlighted the need for a well-organized, functional, and integrated information delivery system to drive development in the agriculture sector, backed by efficient national collaboration programs.

However, Burton (2002) pointed out a critical challenge in underdeveloped communities, where many individuals are unaware of the information they lack or that such information is available to address their issues. Oladele (2011) further emphasized that the absence of agricultural information represents a significant barrier to agricultural progress in developing countries. Agricultural information plays a multifaceted role, interacting with and influencing various aspects of agricultural activities. This underscores its potential to inform decision-making related to land use, labor, livestock, capital, and management. Importantly, agricultural information is not static; it requires continuous updates through research and development efforts, as noted by Opara (2008).

Agricultural activities can arguably benefit from relevant, reliable, and useful information and knowledge, as articulated by Aina (1991). The recognition of the dynamic nature of agricultural information and its pivotal role in development is a recurring theme in the works of scholars such as Mooko..

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II. PURPOSE

The purpose of a farmer chatbot is to provide farmers with a convenient and efficient way to access information, support, and assistance related to farming and agricultural practices. Key objectives and purposes of a farmer chatbot include:

- **Information Access:** The chatbot serves as a readily available source of information on various farming topics, such as crop cultivation, pest control, irrigation techniques, and more.
- **Problem-Solving:** Farmers can use the chatbot to get solutions to specific problems or challenges they encounter in their farming activities.
- **Timely Decision-Making:** The chatbot helps farmers make informed decisions about crop management, resource allocation, and other aspects of farming, ultimately leading to improved yields and profitability.
- **Knowledge Transfer:** It facilitates the dissemination of modern farming techniques, best practices, and expert advice to farmers, helping them stay updated with the latest agricultural trends.
- **Accessibility:** By being available on digital platforms, the chatbot ensures that even small-scale and remote farmers can access valuable agricultural information without the need for extensive travel or

III. OBJECTIVE OF SYSTEM

- **User Education:** To educate farmers on the use of the chat assistant and how to maximize its benefits.
- **Market Information:** To provide farmers with up-to-date market prices, trends, and information on crop demand, helping them make informed marketing decisions.
- **Information Access:** To provide farmers with easy access to a wide range of agricultural information, including crop cultivation techniques, pest and disease management, weather forecasts, market prices, and more

IV. PROPOSED METHODOLOGY

Know your client (KYC) is a guideline for the banking system to validate a customer using identity, appropriateness, risk assessment in establishing a banking relationship. With the growing concern of security, the KYC process is complex and involves a high cost for completing for a single customer.
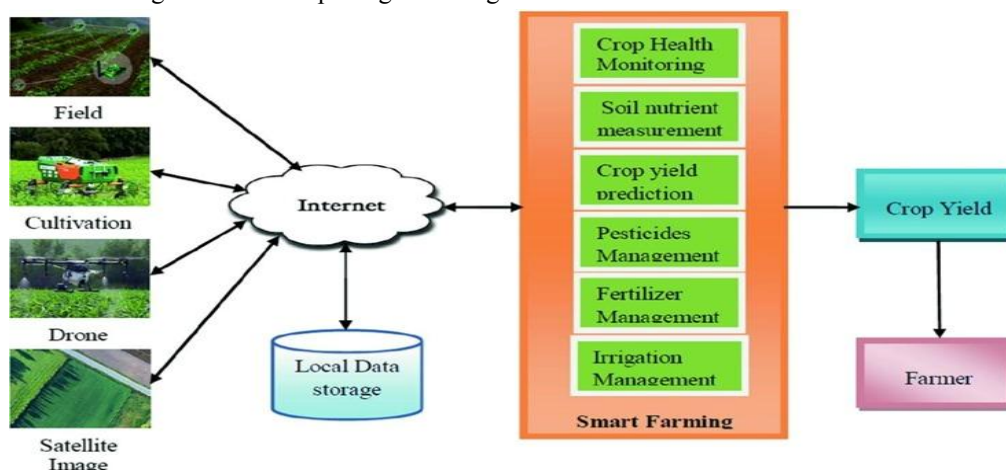

Fig. 1: System Architecture Diagram

We thus propose the mobile application for farmer where Farmer can check production prediction can check weather detail, also click on icons get information by filtering this best application for farmer. In this application farmer can get notification of government also bank details also loan details.

Artificial General Intelligence (AGI) offers significant potential in the realms of breeding and phenotyping in agriculture. By analyzing vast quantities of phenomic, genomic, and environmental data, AGI can greatly assist breeders in the precise and efficient identification and selection of the most promising plant or animal traits. This process surpasses the capabilities of traditional methods. AGI can also tailor predictive models to meet the specific

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needs of breeders, providing forecasts on the performance of different breeding combinations based on phenomic and genomic data, as well as other relevant factors. These models harness machine learning algorithms to optimize breeding strategies and predict the outcomes of various breeding combinations.

Furthermore, AGI can swiftly and extensively impact agriculture by enhancing the effectiveness of existing AI systems. A prime example is the identification of crop pests and diseases. Crop diseases and insect pests pose significant threats to agriculture due to their diverse nature, widespread impact, and frequent outbreaks. Currently, many farmers resort to indiscriminate pesticide spraying to control these issues, inadvertently causing a host of problems.

A farmer bot assistant, designed to support farmers in their agricultural endeavors, can offer a wide range of features and functionalities to cater to the specific needs of the farming community. Here's more information on what a farmer bot assistant can do:

- **Crop Management:** Provide guidance on planting, cultivating, and harvesting different crops, including optimal planting seasons, soil preparation, and irrigation techniques.
- **Pest and Disease Identification:** Help farmers identify and manage crop pests and diseases. The bot can offer information on common pests and diseases in the region and suggest eco-friendly methods for control.
- **Weather Information:** Offer real-time weather updates and forecasts, enabling farmers to make weather-informed decisions for their farming activities.
- **Market Prices:** Provide information on market prices for various crops and livestock, helping farmers make informed decisions about when and where to sell their produce.
- **Fertilizer and Nutrient Management:** Recommend appropriate fertilizers and nutrient management practices based on soil testing and crop requirements.
- **Livestock Care:** Assist with livestock management, including information on animal health, nutrition, and breeding.
- **Financial Management:** Offer advice on budgeting, record-keeping, and financial planning for the farm.
- **Government Schemes:** Inform farmers about government agricultural schemes, subsidies, and support programs they may be eligible for.
- **Agricultural Technology:** Share information on modern agricultural technologies and equipment, as well as tips on using them effectively.
- **Crop Rotation and Diversification:** Recommend crop rotation practices to improve soil health and reduce disease risks. Encourage diversification to enhance farm resilience.
- **Resource Efficiency:** Provide guidance on optimizing resource use, such as water and energy conservation, to reduce costs and environmental impact.
- **Harvest and Post-Harvest Techniques:** Offer insights into the best practices for harvesting, storing, and processing crops to maintain quality and reduce post-harvest losses.
- **Community Building:** Facilitate farmer-to-farmer interaction, where farmers can share their experiences and knowledge with each other.
- **Language Support:** Ensure support for multiple languages to accommodate diverse farming communities.
- **Data Collection:** Collect and analyze data on farming practices, challenges, and success stories to improve the bot's services and contribute to agricultural research.
- **Education and Training:** Provide access to training materials, webinars, and resources to help farmers enhance their skills and knowledge.

V. LITERATURE SURVEY

1. Krishi-Bharati: An Interface for Indian Farmer
Author: Soumalya Ghosh, A. B. Garg, Sayan Sarcar,P.S.V.S Sridhar, Ojasvi Maleyvar and Raveesh kapoor
Year: Dec 2021

In this paper is based on krishi-bharti farming application which is used for farmers into farming. In this application Krishi-bharti iconic interface are used which is communicate with search engine for answering a farmer's query in Hindi language with text and speech format. This application usage a English to Indian language convertor are used for

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converting a user query from Hindi to English language and answers to user into hindi languages. Search engine retrieved the information from internet and translate to language convertor which convert English to hindi language.

2. Towards using ICT to Enhance Flow of Information to aid Farmer Sustainability in Sri Lanka
Author: Lasanthi N.C. De Silva , Jeevani S. Goonetillake and Gihan N. Wikramanayake
YEAR:2022

Farmers need information at all stages of the farming life cycle to make optimal decisions. The required information includes not only prior knowledge but also real time (dynamic) information such as market prices and current production levels. Some valuable information needed by the farmers is produced by government organizations and is available in different locations in different formats. Although farmer is the most important stakeholder in agriculture, there has not been much effort to provide the essential information to farmers on a real time basis. This lack of information is creating many difficulties for farmers as they are not being able to make the correct decisions relating to their farming activities...

3. Gappa Goshti: Experiences in Rural Social Networking
Author: run Pande, Sanjay Kimbahune Pankaj Doke , Priyanka Chandel and Syl-van
Lobo Year: Oct 2019

In this paper we present our experiences with Gappa Goshti - our rural social networking platform. There are several services that have become popular in the digital citizen circles, such as Twitter and Facebook. These platforms started off with just a social aspect, but they have also been used effectively for business In developing countries, like India, adoption of new services especially technology based services, quite often face problems due to poor infrastructure, poor quality of service, poor usability and a high-cost structure. While the Internet has been proven to improve the way of life of developed nations and urban Indian areas, in rural India where around 72 percentage population lives things have not changed much. The services provided by traditional approaches of digital devices are not easily acceptable and adoptable by rural people or people with low literacy. The very first barrier is the cost associated with the service. Along with this, they face usability challenges.   .

VI. CONCLUSION

Agriculture stands as the primary industry in rural areas of Sri Lanka and plays a significant role in the country's economy. However, the profitability of the agriculture sector has been on the decline, leading to a growing trend of rural communities moving away from agricultural practices. Several factors contribute to this shift, with one major issue being the challenge of accessing timely and relevant information related to agriculture.The primary objectives of this project are to establish a network among farmers and offer timely solutions to their agricultural challenges. To achieve these goals, we have created a chat room where farmers can share their experiences and knowledge. Additionally, we have developed an intelligent Chat-Bot that operates online and provides solutions to specific issues faced by farmers. To ensure the Chat-Bot's effectiveness, we extracted intents and examples through questionnaires and interviews conducted with farmers and experts. The Chat-Bot's knowledge base is programmed using the Artificial Intelligence Markup Language (AIML). We have trained the Chat-Bot using specific examples to predict user intents accurately. Users can interact with the Chat-Bot through a user-friendly interface, making it accessible and user-centric

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