IJARSCT

ISSN (Online) 2581-9429

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Impact Factor: 7.53

Volume 4, Issue 3, April 2024

Implementation of Agricultural Assistant Chatbot using Artificial Neural Network

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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.

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 resources

III. OBJECTIVE OF SYSTEM

User Education: To educate farmers on the use of the chat assistant and how to maximize its benefits.

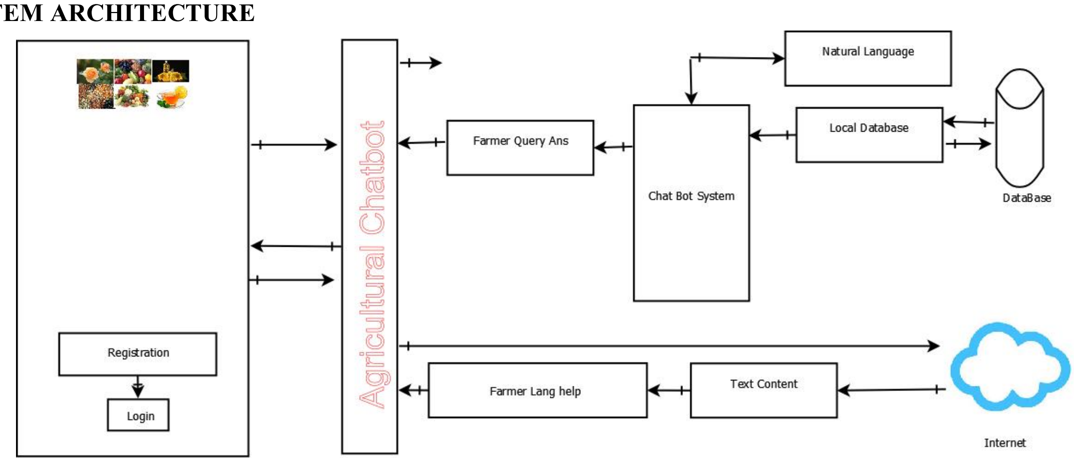
Market Information: To provide farmers with up-to-date market prices, trends, and information on crop demand, helping them make informed marketing decisions.

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 SYSTEM

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.

SYSTEM ARCHITECTURE



In above Architecture we can see how to chat bot work, In this system we are providing agriculture chat bot for farmer in this system farmer can get help on any problem in local language. Only farmer has to pass his query in text format system will generate proper answer. This very unique system. We thus propose the mobile application for farmer where

DOI: 10.48175/568

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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 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.

V. RESULT

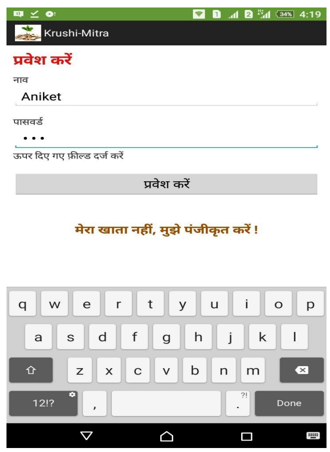

Fig.1 Login Screen

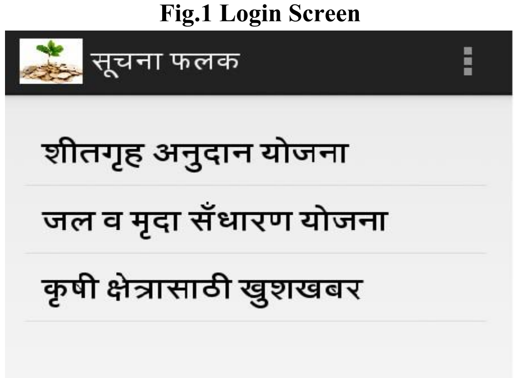

Fig.2 Notification

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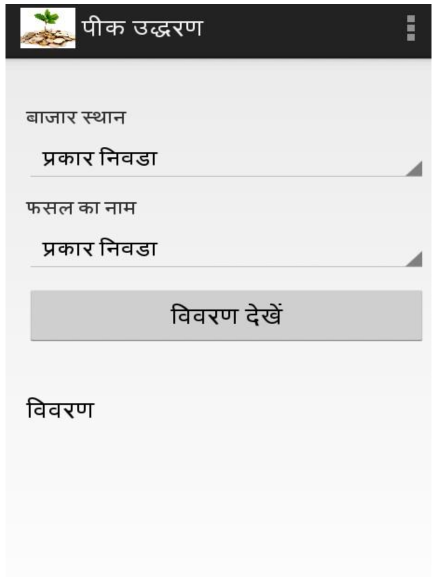

Fig 3.Production Prediction

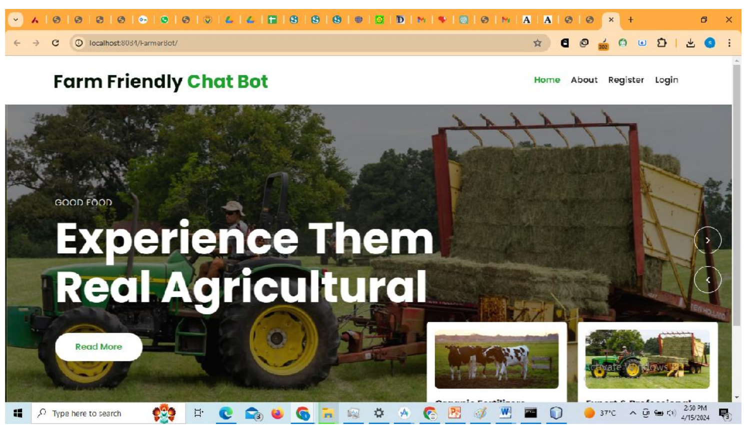

Fig .4 Web Panel

Fig 5.Chat bot

VI. CONCLUSION

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 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.

VII. ACKNOWLEDGMENT

We express our heartfelt gratitude to our esteemed mentors and professors, especially Prof.A.S.Kale, for their invaluable guidance in our academic and project endeavours. We also extend our thanks to the *Information Technology*Department and its staff for their continuous support. Our sincere thanks go to Dr.Yadav D.M. and HOD Of ITDr.Rokade P. P, Principal of SND COLLEGE OF ENGINEERING & RESEARCH CENTRE,YEOLA for his support and permission to complete this project. We appreciate the assistance of our department's support staff, and we're grateful to our parents, friends, and all those who supported us throughout this project.

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