



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 2, April 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.379



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

An AI Based Chatbot for Government Schemes

Mr. Sasikumar P, Gokul B, Karthiga S, Rekha K, Revathi A

Assistant Professor, Department of Computer Science and Engineering, Knowledge Institute of Technology,
Salem, India

Department of Computer Science and Engineering, Knowledge Institute of Technology,
Salem, India

ABSTRACT: Global governments have been utilizing digital technologies more frequently in the past several years to provide accessibility to public programs and expedite citizen services. However, because of complicated qualifying requirements and scattered information, figuring out one's eligibility for different government programs continues to be a difficult undertaking for a lot of folks. In order to make the process of determining a citizen's eligibility for government schemes more efficient, this project suggests developing an AI-based chatbot. With the use of this technology, which incorporates natural language processing (NLP), citizens can use an interactive interface to find out if they qualify for any government programs by just having natural language conversations. By utilizing natural language processing (NLP), the chatbot decodes and analyzes user inquiries, obtaining pertinent data and intentions. The suggested solution is made to handle a number of issues that come with using conventional eligibility evaluation procedures. Firstly, it offers a user-friendly interface that is available through online browsers, saving individuals from having to visit government offices or navigate complicated websites. Second, the chatbot simulates human-like interactions using conversational AI approaches, providing consumers with a tailored and user-friendly experience. Additionally, the system guarantees uniformity and lessens uncertainty in eligibility assessment by centralizing data on numerous government programs and eligibility requirements.

KEYWORDS: Government programs; Eligibility; Natural Language Processing; Interactive interface; AI based chatbot; Conventional Procedures; Efficiency.

I. INTRODUCTION

Chat-bots that use artificial intelligence (AI) are at the forefront of human-computer interaction, revolutionizing how humans interact with technology and communicate. These sophisticated virtual assistants operate on a variety of platforms and in a range of industries. Their natural language processing (NLP) skills and sophisticated algorithms allow them to blend effortlessly into our day-to-day activities. AI chat-bots are intelligent computer programs created to mimic human interaction. They may answer questions, provide information, and even carry out tasks on their own. In contrast to conventional chat-bots, artificial intelligence (AI) chat-bots employ machine learning methods to learn from interactions over time, improving their comprehension and capacity to adjust to various user preferences and settings.

Within the field of artificial intelligence (AI), Natural Language Processing (NLP) studies how people and computers communicate using natural language. It makes it possible for computers to produce meaningful and contextually appropriate human language through understanding, interpreting, and generation. NLP covers a broad spectrum of activities, such as information extraction, machine translation, text analysis, sentiment analysis, and language generation. In order to handle and interpret textual data, these methods frequently rely on linguistic norms and machine learning algorithms. The suggested AI-based chat-bot is, all things considered, a huge advancement in the modernization of public service delivery. Through the use of state-of-the-art technology, the system streamlines citizen's government interactions and improves accessibility while simultaneously boosting the effectiveness and diversity of the public service ecosystem. In the end, it represents a dedication to using innovation to advance society and open the door for a more open, transparent, and citizen-focused system of government.



II. ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) represents the pinnacle of human ingenuity, bringing to fruition the age-old dream of creating intelligent machines. At its core, AI aims to endow computers with the ability to perceive, reason, learn, and act in a manner reminiscent of human intelligence. This transformative field encompasses a broad spectrum of technologies, methodologies, and applications that have the potential to revolutionize virtually every aspect of our lives. One of the fundamental goals of AI is to replicate human cognitive abilities, such as understanding natural language, recognizing patterns, solving problems, and making decisions. Achieving this requires interdisciplinary efforts drawing from computer science, mathematics, neuroscience, psychology, and linguistics, among other fields. By amalgamating insights from these diverse disciplines, AI researchers strive to develop algorithms and systems capable of emulating and even surpassing human intelligence in various domains.

III. LITERATURE SURVEY

Ensuring public access to government programs is a top priority in modern governance. A potential remedy for the difficulties citizens face navigating the complex web of laws and programs is the development of AI-based chat-bots. This survey of the literature digs into important research areas that highlight the revolutionary potential of AI-driven technology in simplifying citizen interactions with government programs.

In recent years, there has been a lot of interest in the application of AI technology to the provision of public services. Researchers that have examined the various uses of AI, including Zhang et al. (2019), have highlighted how AI may be used to improve the efficacy and efficiency of service delivery. AI has changed citizen-government relations by automating chores, analyzing data, and offering individualized help. This has opened the door for more accessible and responsive governance frameworks.

As a key component of modernizing government services, chat bots provide citizens with a conversational interface for navigating confusing information environments. Research by Jones and Patel (2019) and Smith et al. (2020) have demonstrated the effectiveness of chat bots in giving citizens prompt, individualized assistance. Chat bots serve as a link between citizens and government programs, providing real time answers to user inquiries and streamlining the process of obtaining important information.

In 2021, we developed a study report and an early training model to enhance human-database interaction. We characterize the chatbot's features and human actions using natural language processing. In this research, we propose a deep feed forward multilayer perceptron-based AI chatbot interaction and prediction model. Our investigation revealed a deficiency in the understanding of theoretical principles and useful suggestions for developing AI chatbots for lifestyle enhancement initiatives. This report also includes a quick comparison of our proposed model with respect to testing accuracy and time complexity. Our work has a minimum loss of 0.1232 and a maximum accuracy of 94.32%.

When a user has questions or has difficulties during the assembly process, the Chat bot may classify their purpose and then provide answers or directions. Two approaches to solving this issue are presented in this study. Firstly, we use the YO LO-based Masker with CNN (YMC) model to capture both visual and textual characteristics. Encoding multimodal characteristics for user intent categorization using an auto encoder is another. The simple online application College Enquiry Chat-bot, powered by AI and web-based interaction, seeks to provide information about colleges. The chat-bot developed here is a web-based program that can have conversations with humans using AI terminology and tongue processing libraries. Among the internet apps that have been developed recently are "Eliza" and "Clever bot." The goal of this project is to develop a chat bot that students may use to quickly get answers to their questions from the college website. Chat-bots can mimic human dialogue by using artificial intelligence.

Adhering to user-centric design concepts is essential for AI-based chatbots to succeed. According to Wang et al. (2018) and Li et al. (2020), enhancing user happiness and engagement can be achieved through personalized interactions and intuitive interfaces. Chat bot systems can provide smooth and easy-to-use experiences by giving priority to the needs and preferences of users. This allows citizens to easily find out about eligibility for schemes and remain updated about potential advantages.

Overall, the literature analysis clarifies how AI-powered chat-bots might improve citizen access to government

programs in a revolutionary way. These chat-bots use artificial intelligence (AI), especially natural language processing (NLP), to help citizens easily traverse the complex web of regulations and programs while expediting the eligibility evaluation process and promoting transparency. To ensure that AI-driven solutions are inclusive and effective in promoting public service ecosystems, more study is necessary to determine their scalability, sustainability, and long-term effectiveness.

IV. EXISTING SYSTEM

The present approach creates a government scheme application portal, which expedites the application process for many government programs. This portal makes it simple for citizens to apply, acquire information about current programs, and track the status of their applications in real time. However, the scheme application portal may have various shortcomings. One major drawback is that navigating and using the portal effectively requires more manual skill. Some candidates, particularly those with little digital literacy or technological proficiency, may find it challenging to understand the application procedures and use the interface despite the portal's user-friendly design.

As a result, in order to correctly submit their applications, these persons might require assistance from government workers or other support services. If manual knowledge is needed, candidates might also have trouble acquiring the help and direction they need, which could lead to delays and inefficiencies in the application process. Furthermore, if applicants receive too much manual assistance, government workers serving them may be overworked, leading to a shortage of resources and longer response times.

V. PROPOSED SYSTEM

The suggested approach uses natural language inquiries to determine eligibility, and then uses an AI-based chatbot to expedite the process of gaining access to government schemes. This method builds an AI-based chatbot using natural language processing (NLP) and an application gateway. With a focus on agriculture and education in particular, this approach aims to assist citizens in navigating government initiatives. By serving as a complete information center, this state-of-the-art online tool streamlines the process of understanding eligibility requirements for various schemes. Our chatbot's ability to assess client requests and deliver clear, concise replies regarding the requirements for government programs is made possible by its use of natural language processing (NLP). The entire user experience and efficacy of the system are improved because of this iterative learning process, which keeps the Chatbot current with changing eligibility requirements and user preferences.

The suggested AI-driven chatbot system presents a positive outlook for resolving the difficulties involved in obtaining government programs. The system makes it easier for citizens to obtain scheme credentials by interpreting natural language inquiries, analyzing pertinent data, and responding quickly. The system's user-friendly interface and ongoing enhancements made possible by Natural Language Processing techniques are intended to enable citizens to easily find out if they qualify for a scheme, get immediate feedback, and remain updated about benefits that are available. This will ultimately encourage increased accessibility and use of government resources.

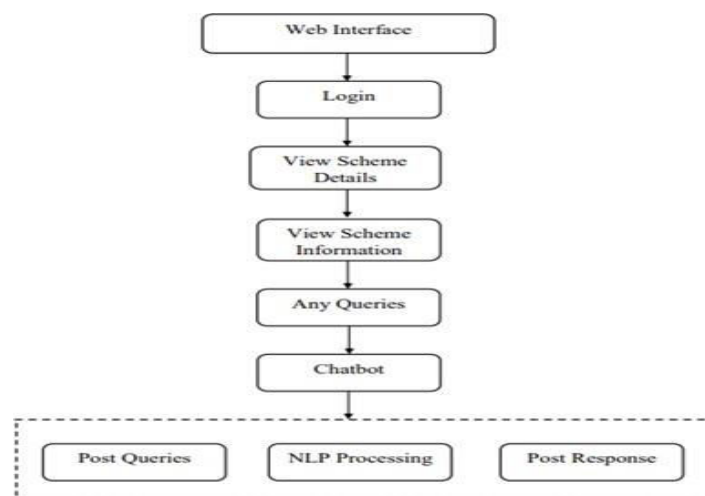


Fig 1. Workflow of the System

VI. SYSTEM ARCHITECTURE

A comprehensive framework that integrates several components to enable efficient information dissemination and user engagement is part of the system architecture of an AI-based chatbot focused on agriculture and education that is intended for government program eligibility. First, the front end interface, which can be accessed via a web application, is one of the architecture's primary components. Users looking for information about government programs pertaining to agriculture and education can primarily communicate through this interface. People can input questions and receive real-time responses through its user friendly platform. The back end system, which contains the intelligence and functionality of the chatbot, is in communication with the front end interface. With the use of natural language processing (NLP) algorithms, the chatbot deciphers user inquiries, evaluates their intentions, and extracts pertinent material from a centralized database that includes specifics about different government initiatives. The database is the central repository for information about the scheme, which includes application methods, eligibility requirements, and other relevant details. It is updated frequently to guarantee accuracy and comprehensiveness and to reflect the most recent changes in governmental projects and policies.

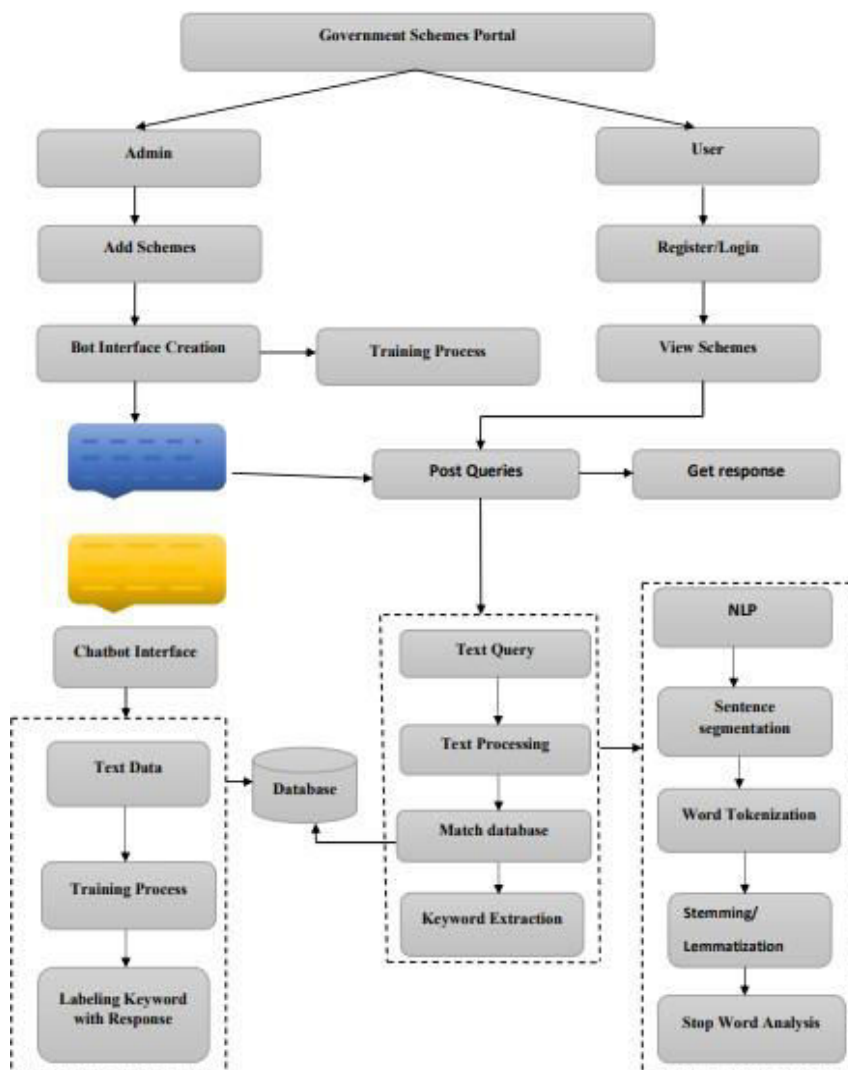


Fig. 2. Architecture Diagram

VII. METHODOLOGY

1. Administrator Module:

- **1.Login:** Administrators can secure system access by using a username and password authentication.
- **2. Interface Creation:** Personalization of the chatbot's user interface, encompassing design layout and the incorporation of interactive components such as menus and buttons.
- **Keyword Training:** The chatbot can be trained by administrators by adding and changing terms, expressions, and answers pertaining to government programs and qualifying requirements.
- **View User Details:** Get access to information on user interactions, including questions, comments, and eligibility assessment outcomes make it easier to analyze user interactions and pinpoint areas where chatbot performance needs to be improved.

2. User-Side Module:

- **Register:** With the submission of personal data, including name, contact information, and required identity documents, users can create accounts.
- **Login:** To utilize the chatbot's features and services, registered users must safely log in.
- **Post Questions:** As part of their interaction with the chatbot, users ask questions about whether they qualify for particular government initiatives. Information like income and work status, among other pertinent factors, may be included in the queries.
- **Get Answer:** The chatbot, which makes use of natural language processing, evaluates user inquiries and provides precise answers about the suitability of government programs. A database containing the scheme criteria and eligibility requirements is used to personalize responses based on user input.

VIII. CONCLUSION

In conclusion, the creation of an AI-based chatbot for government initiatives is a major step in improving the accessibility and transparency of public services. The chatbot employs artificial intelligence and Natural Language Processing (NLP) methodologies to furnish citizens with an intuitive interface for maneuvering through the intricacies of government policies and initiatives.

The deployment of this chat bot aims to alleviate the difficulties citizens encounter in comprehending eligibility requirements and obtaining essential information regarding government initiatives. The chatbot expedites encounters and encourages inclusivity in the provision of public services by automating the eligibility screening process and providing real-time answers to user inquiries.

In addition, the ongoing enhancement of the chatbot's precision and reactivity using natural language processing techniques guarantees that citizens have precise and tailored support. This promotes openness, increases accessibility to government programs, and gives residents the opportunity to decide for themselves what advantages are most important to them.

All things considered, the suggested AI-based chat bot system is a vital component in creating a diverse and effective public service ecosystem. It advances the general objective of enabling smooth interactions between citizens and government services, strengthens citizen involvement, and encourages accessibility to important information. These technological advancements have the potential to revolutionize public administration by increasing accessibility, efficiency, and citizen-centricity of government services.

REFERENCES

1. Sanjay Chakraborty, Hrithik Paul, Sayani Ghatak, Ankit Kumar, Saroj Kumar Pandey, Kamred Udham Singh, and Mohd Asif Shah. "An AI-based medical chatbot model for infectious disease prediction." 10(2022) IEEE Access: 128469–128483.
2. Chen, Tzu-Yu, Richard Tzong-Han Tsai, Yu-Ching Chiu, and Nanyi Bi. "Multi-modal chatbot in intelligent manufacturing." 2021 IEEE Access 9: 82118-82129.
3. Jaya Gupta, Jitesh Nambiar, Keyur Mithari, Parkar, Rohan, and Yash Payare. "AI and web-based interactive



- college enquiry chatbot." 13th International Conference on Electronics, Computers, and Artificial Intelligence (ECAI), 2021, pp. 1–5. IEEE, 2021.
4. Daniel, Gwendal, Laurent Deruelle, Mustapha Derras, and Jordi Cabot. "Xatkit: a multimodal low-code chatbot development framework." 2020 IEEE Access 8: 15332-15346.
 5. Hwang, KangYoon Lee, Se-Min Hyun, JuHui Lee, and Tae-Ho Hwang. "Implementation of interactive healthcare advisor model using chatbot and visualization." The International Conference on Convergence of Information and Communication Technology (ICTC 2020), pages 452-455. IEEE, 2020.
 6. Addi, Lili Jiang, and It-Mlouk. "KBot: a Knowledge graph based chatBot for natural language understanding over linked data." In 2020, IEEE Access 8: 149220–149230.
 7. Oh, Dongkun Lee, Byungsoo Ko, Ho-Jin Choi, and Kyo-Joong. "A chatbot for psychiatric counseling in mental healthcare service based on emotional dialogue analysis and sentence generation." 1773–1775, in the Proceedings of the 18th IEEE International Conference on Mobile Data Management (MDM). IEEE, 2017.
 8. A Conversational Agent for an Online Mental Health Intervention, D. Elmasri and A. Maeder, Proc. of the International Conference on Brain and Health Informatics, pp. 243-251, 2016.
 9. B. K. Kim, J. Roh, S. Y. Dong, and S. Y. Lee, "Deep convolutional neural networks in hierarchical committee for robust facial expression recognition," Journal on Multimodal User Interfaces, vol. 16, no. 1, 2016.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details