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# PREGNANCYPAL: USING ML AND NLP TO SUPPORT WOMEN AND FAMILIES ON THEIR JOURNEY

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**ABSTRACT:** Artificial intelligence is altering healthcare by causing a significant paradigm change in diagnostic techniques, medication discovery, health analytics, therapies, and much more. This study focuses on using AI-based chatbot systems, mostly based on machine learning algorithms and Natural Language Processing, to comprehend and respond to the requirements of patients and their families. In specifically, we present an application scenario for an AI-chatbot that provides assistance and guidance to pregnant women, moms, and families with small children in appropriate contexts.

## 1.INTRODUCTION

With a growing interest in chatbots based on various digital platforms such as websites, social channels, and mobile apps, a wide range of gratifications have been suggested as motivators of chatbot use. In general, productivity is considered to be a key factor in driving chatbot use, which means that the ease, speed, and convenience of using chatbots can help their users, who seek instant gratification via quick and consistent feedback and dialogue to obtain information or assistance in a timely and efficient manner [1]. Particularly, medical chatbots as a virtual doctor or educator have been built to reduce the burden of health care costs, improve the accessibility of medical knowledge, and empower patients with their medical decision-making process [2-8]. When it comes to developing medical chatbots using artificial intelligence (AI), a number of previous studies have focused on not only accurate prediction, diagnosis, or personalized management and treatment of diseases based on their symptoms [3,4,6-9], but also conversational agent role in social and emotional support and mental health interventions [10-16]. However, the major challenge perceived by more than 70% of the medical physicians in one study is the inability of health care chatbots to address the full extent of a patient's needs and understand or display the emotional state of humans [17]. Furthermore, common concerns on inaccurate and inflexible information that chatbots provided have been raised [3,5,17-20]. Despite these continuous attempts to provide patients with better user experience (UX) on informational and emotional support, both costs and benefits are still associated with the use of medical chatbots.

## 2.LITERATURE SURVEY

**2.1 L. Dayer, S. Heldenbrand, P. Anderson, P.O. Gubbins, B.C. Martin, Smartphone medication adherence apps: Potential benefits to patients and providers, J. Am. Pharm. Assoc. 2013; 53:172.**

**ABSTRACT:** To provide an overview of medication adherence, discuss the potential for smartphone medication adherence applications (adherence apps) to improve medication nonadherence, evaluate features of adherence apps across operating systems (OSs), and identify future opportunities and barriers facing adherence apps.

Practice description

Medication nonadherence is a common, complex, and costly problem that contributes to poor treatment outcomes and consumes health care resources. Nonadherence is difficult to measure precisely, and interventions to mitigate it have been largely unsuccessful.

Practice innovation

Using smartphone adherence apps represents a novel approach to improving adherence. This readily available technology offers many features that can be designed to help patients and health care providers improve medication-taking behavior.

**2.2 N. Tripp, K. Harney, A. Liu, A. Poulton, M. Peek, J. Kim, R. Nanan, An emerging model of maternity care: Smartphone, midwife, doctor?, Women Birth. 2014;27:64--67**

**Background:** Mobile technology in the form of the smartphone is widely used, particularly in pregnancy and they are an increasing and influential source of information.

**Aim:** To describe the diverse nature of pregnancy related applications (apps) for the smartphone and to flag that these apps can potentially affect maternity care and should be considered in future planning of care provision.

**Methods:** The 2 smartphone platforms, Apple and Android, were searched for pregnancy related apps and reviewed for their purpose and popularity.

**Findings:** iTunes and Google Play returned 1059 and 497 pregnancy related apps respectively. Forty percent of the apps were informative, 13% interactive, 19% had features of a medical tool and 11% were social media apps. By far the most popular apps, calculated as the number of reviews multiplied by average reviewer rating, were those with interactive features.

**Discussion:** The popularity of pregnancy-related apps could indicate a shift towards patient empowerment within maternity care provision. The traditional model of 'shared maternity care' needs to accommodate electronic devices into its functioning. Reliance on healthcare professionals may be reduced by the availability of interactive and personalised information delivered via a smartphone. This combined with the fact that smartphones are widely used by many women of childbearing age, has the potential to modify maternity care and experiences of pregnancy. Therefore it is important that healthcare professionals and policy-makers are more aware of these new developments, which are likely to influence healthcare and alter health-seeking behaviour. In addition healthcare professionals need to consider whether to discuss the use of apps in pregnancy with the women in their care.

## 3.PROPOSED SYSTEM

with this project, we are developing the MAMABOT application, which will assist pregnant women with getting answers to their questions or concerns. To create this project, we employed NLP (natural language processing toolset) and the LSTM Machine Learning Algorithm.

LSTM will be trained with all potential questions and answers, and anytime a user asks a question, LSTM will predict the response and send it to MAMABOT to show to the user. To train LSTM, we used some pregnancy-related questions and responses from the internet because there was no public dataset accessible, and all of these questions were recorded as JSON files in the dataset folder.

**3.1 IMPLEMENTATION**

User Module:

This module manages user interactions with the application.

It includes components for user authentication, registration, and profile management.

Users can input their queries or questions related to pregnancy through the user interface.

Environment Module:

The environment module handles the context in which the application operates.

It may include components for managing user preferences, language settings, and location-based services.

This module ensures that the responses provided by MamaBot are tailored to the user's specific environment and needs.

Question and Answer System Module:

This is the core module responsible for processing user queries and generating responses.

It integrates the NLP and Machine Learning components to understand user questions and provide accurate answers.

The question and answer system module orchestrates the flow of data between different components, including the NLP module, the Machine Learning module, and the user interface.

Plugins/Components Module:

This module facilitates extensibility by allowing the integration of additional plugins or components.

It provides a modular architecture for adding new features, such as integration with third-party services, additional language support, or custom functionalities.

Plugins/components can be dynamically loaded and configured based on user preferences or requirements.

Node Server / Traffic Server Module:

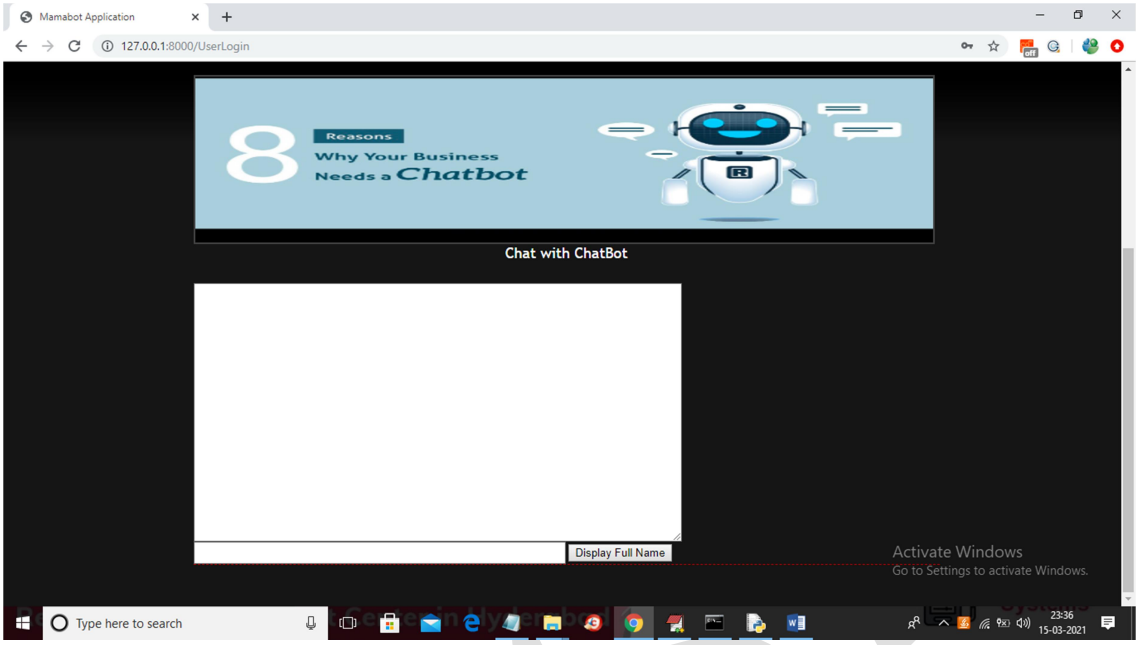
This module handles the backend server infrastructure for hosting and serving the MamaBot application.

It may utilize Node.js for server-side scripting and handling incoming requests.

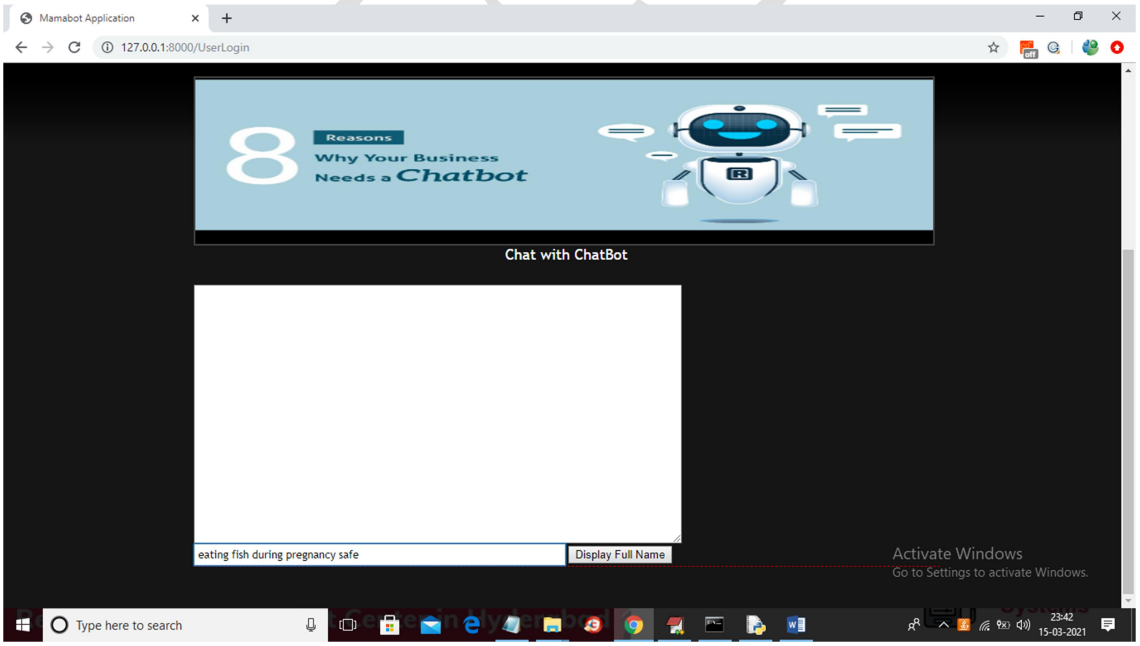
The traffic server component manages incoming traffic, load balancing, and routing requests to the appropriate backend services.

It ensures high availability, scalability, and reliability of the application, especially during peak usage times.

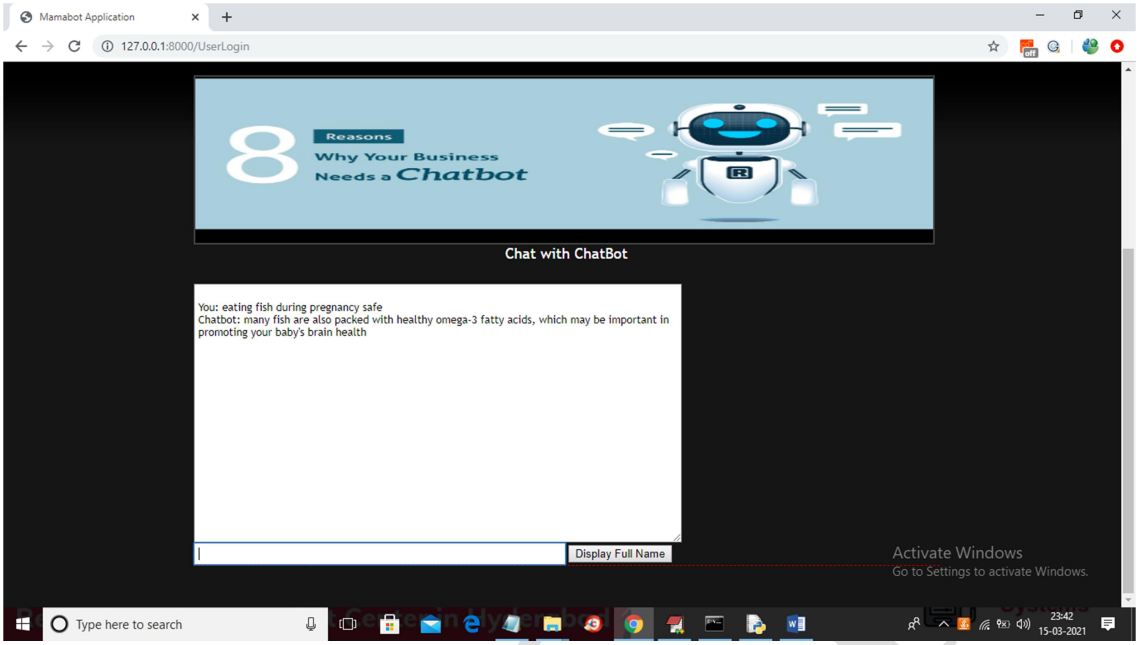
## 4.RESULTS AND DISCUSSION



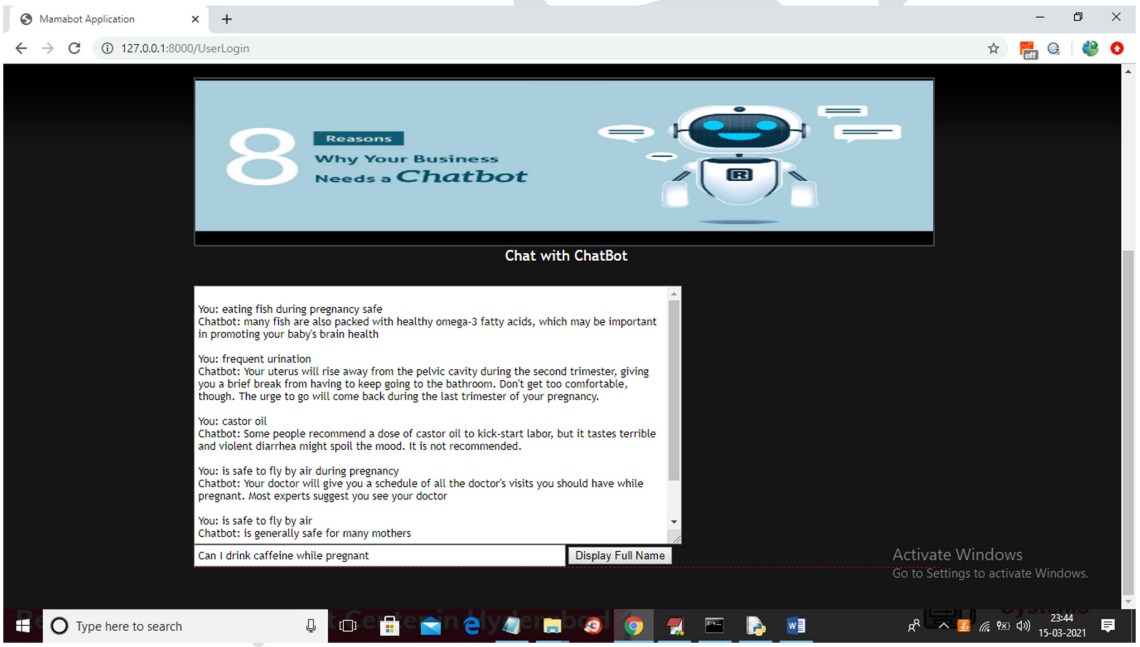

**In above screen user can enter any query and then click on 'Display Full Name' button to get answer from MAMABOT and if question not available in MAMABOT train model then user will get SORRY message**



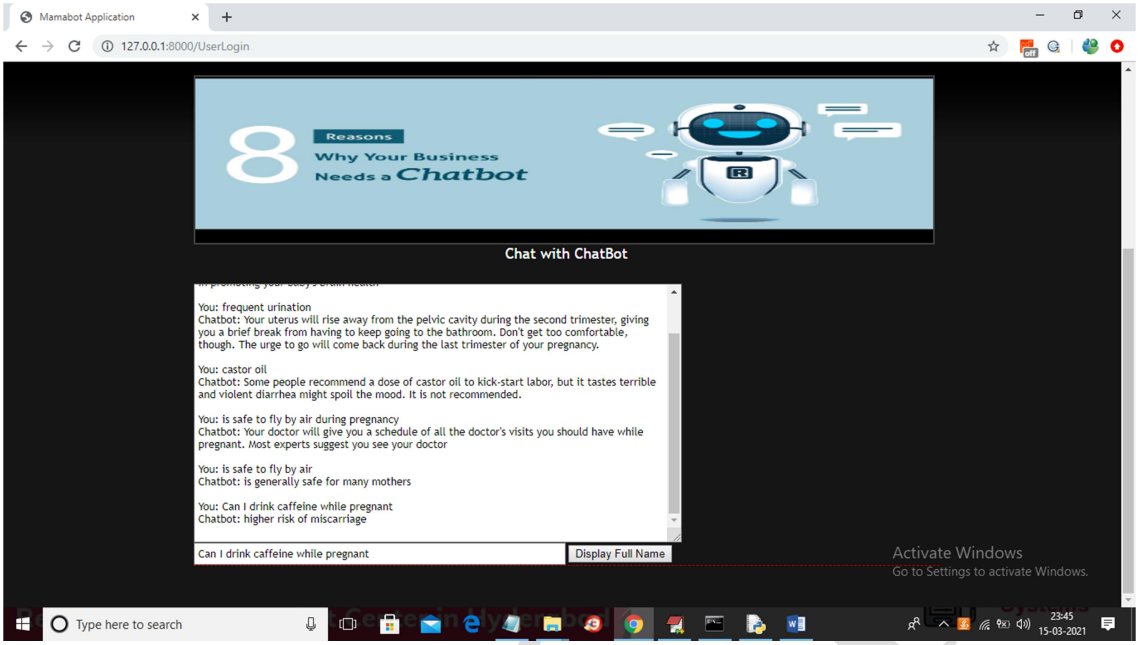

**In above screen user type some question and then press button to get below output**



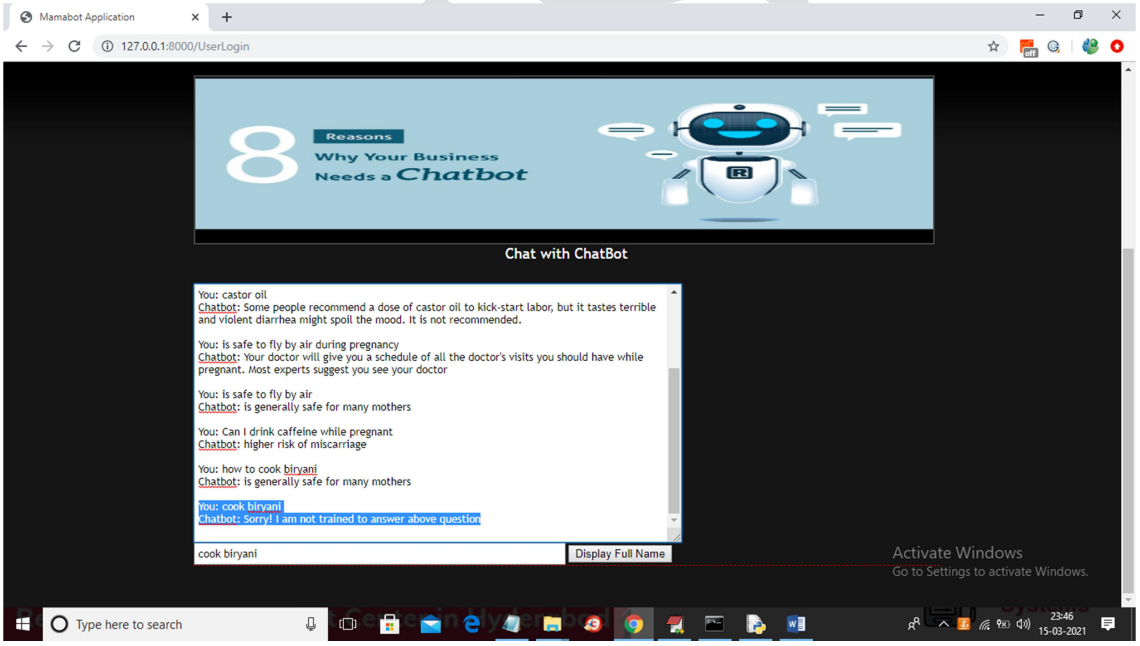

**In above screen we got some answer from MAMABOT and try some other questions as**




**In above screen I ask some question and MAMABOT answer it well**




**You can ask all questions available in dataset/question.json file and now give some query out of train model**




**In above screen I ask question as 'cook biryani' and bot answer as SORRY**

## 5.CONCLUSION

The primary goals of the research were to create an algorithm capable of identifying answers connected with user-submitted questions. Create a database in which all relevant data will be stored, as well as an internet interface. The web interface was divided into two sections: one for basic users and one for administrators. Background research was conducted, including an overview of the onversation procedure and any existing chat

bots. A database system was built to hold information such as questions, responses, keywords, logs, and feedback messages.

We can incorporate speech-based queries and responses into future versions of our project. Users only need to submit voice-based input, and the generated bot will deliver both text-based and voice-based output. Simply by adding speech-to-text and text-to-speech, we may improve the usefulness of our project.

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