Project Reference Number:

46S_BE_5411

Title of the project:

MAMA BOT: A SYSTEM BASED ON ML & NLP FOR SUPPORTING WOMEN & FAMILIES DURING PREGNANCY

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Introduction (20 lines)

The problem that occurs to most of the pregnant ladies is due lack of knowledge about symptoms felt during pregnancy. This problem makes pregnant women unaware of the dangers of specific symptoms that trigger dangerous diseases and lead to miscarriage and even death. Factors that influence the lack of knowledge of pregnant women include education, environmental culture and information.

This project present MamaBot, an AI-based chatbot, designed to help and support pregnant women, mothers, and families with young children with the goal of providing them fast and useful recommendations in case of emergencies (e.g., "where is the nearest hospital") but also answers to their needs and references concerning disease prevention pathways, guidance on most proper lifestyles, etc.

Specifically, pregnant women, mothers and families with young children will benefit from the chatbot by asking for different information (starting from a general level up to specific pathways questions) and receiving a first-level support interacting with it as it were a human being, in a chat-like conversation model.

Objectives (about 10 lines)

The main objective is to analyse various compound reasons of pregnancy related issues and the technologies available to solve such issues.

1. Instant Solutions at Your Fingertips: Get quick answers to all your pregnancy-related queries, anytime, anywhere.
2. Stay on Top of Your Health: Experience real-time health monitoring and updates, ensuring your well-being throughout the beautiful journey.
3. Emergency Alerts: Rest easy knowing that your emergency contacts will be instantly notified in case of any unforeseen situations.
4. Discover Nearby Hospitals: Find the nearest hospitals tailored to your specific needs, ensuring you have access to the best care when you need it the most.
5. Convenient Pharmacy Locator: Locate nearby pharmacies with ease, ensuring you never run out of essential medications or supplies.
6. Nourish Your Little One: Unlock a treasure trove of nutrition tips to ensure your child's healthy growth and development right from the start.
7. Emergency Management for Children: Gain valuable insights and guidance on handling emergency situations involving your little bundle of joy.

Methodology (about 20 lines on materials, methods, details of work carried out, including drawings, diagrams etc)

To implement the MAMABOT we are using Natural Language Processing (NLP) and DNN algorithms.

Materials used heartbeat pulse sensor, 5V passive buzzer, Temperature sensor (DHT11), Arduino UNO, and raspberry pi (4B 4gb).

A chatbot architecture is composed by three main concepts: intent, entity, and response.

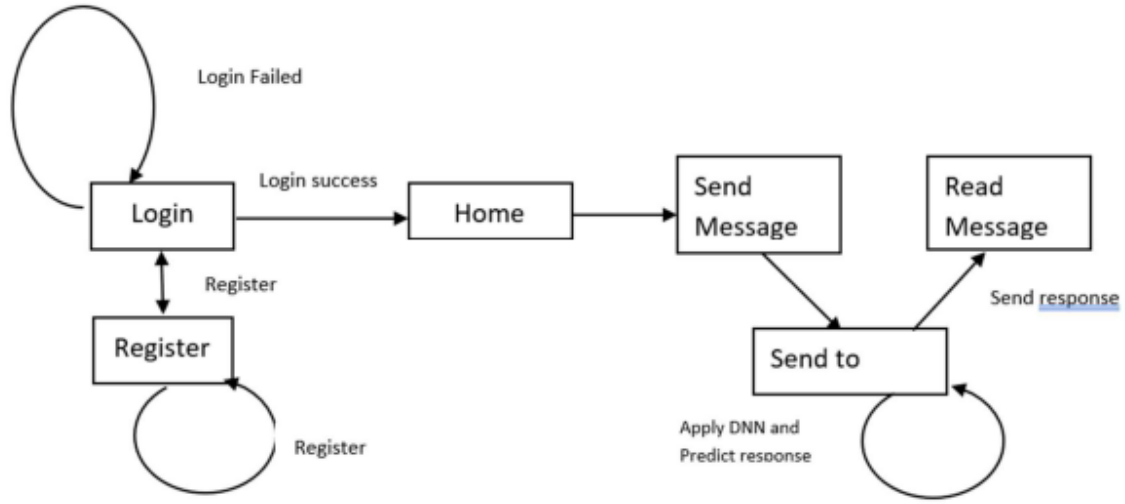
An intent, a purpose or goal expressed in the user input message, such as answering a question or demanding a service. It is based on user input and can be associated to verbs included in the user message: what actions should be taken?

An entity, a class of object or a data type, relevant to the user purpose. It can be associated to nouns: what things are your bots acting on? The interaction begins with a user input message, which will be processed through two modules:

1) Intent classification module, which checks the user input message and identifies the purpose of the user message.
2) Entity recognition module, which recognizes user message structure and extracts the main keywords mentioned in the user input. Both modules are very important to find out the intents and entities throughout the interaction between the user and the bot.

The dialog uses intents and entities identified in the user input, as well as the context of the conversation, to interact with the user and finally provide a useful response (by means of the response generator module)

Data Flow Diagram



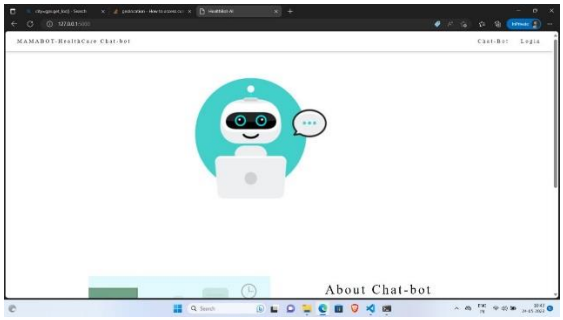
Describes the overall process of this project. we are passing questions as input the system will efficiently analysis the questions and detects the problems and provides the correct reply to the students using NLP.

Results and Conclusions (about 20 lines with specific reference to work carried out)

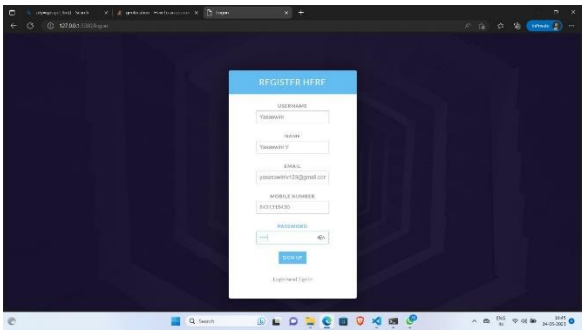
Well-designed and implemented, chatbots can increase users' engagement and self-empowerment, by providing a better experience and save costs for the healthcare system (by reducing the number of unnecessary consultations). There are still several challenges in using chatbots (e.g., conversations generally cannot be very complex and require increasing resources when expanding the chatbot domain focus).

The prototype needs further testing under real conditions, but its current status suggests that deployment will be straightforward. In general, we have found that as the intents grow, the

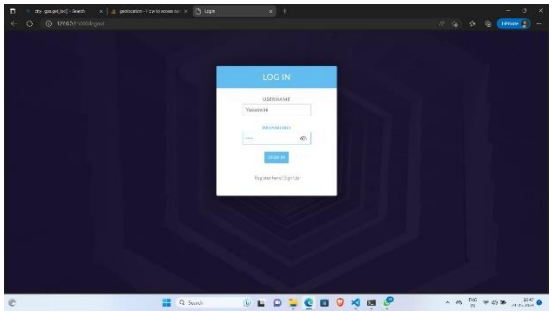
use of similar words in different contexts can lead to a reduction in the accuracy of the system in identifying the specific intent.



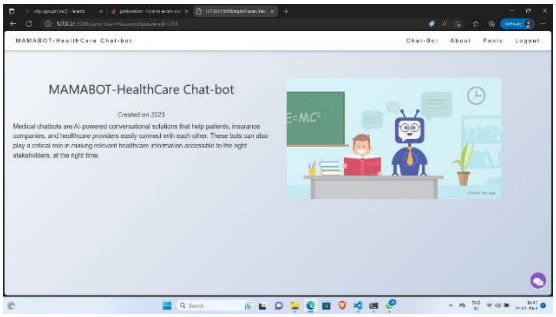
Screenshot 1: shows index or initial page before login.



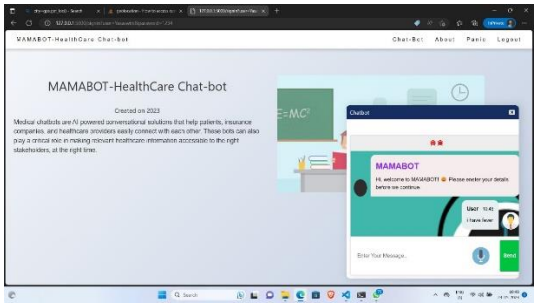
Screenshot 2: Sign up page to create account.



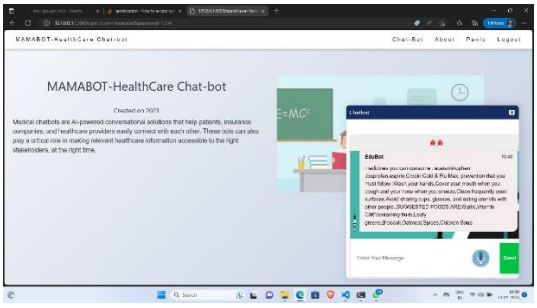
Screenshot 3: login page to login account



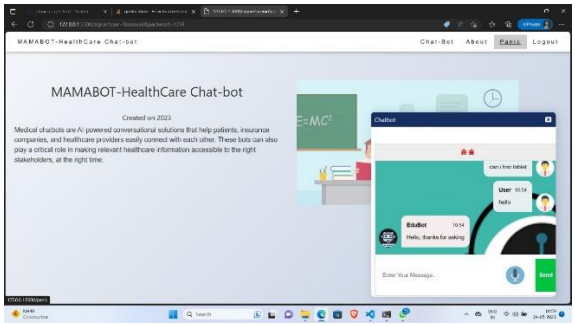
Screenshot 4: after login index page



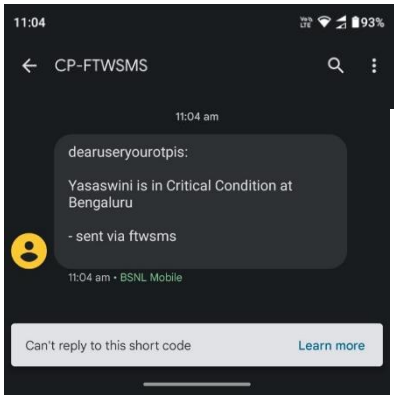
Screenshot 5: opening chat bot and putting or giving voice command regarding queries.



Screenshot 6: chat bot giving solution on queries asked but both audio and display.



Screenshot 6: Panic button send alert to the emergency contacts.



Screenshot 6: alert sent to emergency contact

The result of this project is a chatbot which provides medications and suggestion for the user for a particular symptom asked. It provides nearby hospitals and pharmacies. The IOT designed is used to regulate heartbeat and temperature. The IOT device has a buzzer attached to it that buzzes when the heartbeat or temperature goes out of a certain limit.

Scope for future work (about 20 lines).

This can be further developed to an application with the following abilities:

This powerful web chatbot evolves into an intuitive application, bringing its capabilities to your fingertips. Experience the convenience of live slot booking for nearby hospitals, ensuring you secure the care you need effortlessly. Effortlessly order medicines from the nearest pharmacy, saving you time and hassle. Safely store your medical history in the cloud, allowing easy access and streamlined sharing with healthcare providers. Stay informed about bed availability in hospitals through live updates, ensuring you have the latest information when it matters most. Unlock personalized recommendations for policies and insurance options relevant to your unique needs. Enjoy a comprehensive food chart tailored to user pregnancy, ensuring optimal nutrition for both user and the baby. Set up reminders and let the app play soothing background music based on your mood, creating a serene and relaxed environment. Track the progress of your medicine delivery, keeping you informed and assured of timely access to essential medications. Gain valuable insights through informative video tutorials, empowering you with knowledge and guidance in any situation. Create joyful moments for your little ones with a collection of music and poems tailored for their enjoyment. Utilize a tracking system to record and monitor your baby's movements and kick counts, ensuring their well-being. Monitor your sleep patterns, exercise routines, and hydration levels, supporting a healthy lifestyle during pregnancy. Receive timely reminders about your water intake, promoting optimal hydration for you and your baby's health. Connect and share experiences with other expectant parents, fostering a sense of community and support. Input your due dates, track your pregnancy progress, and receive tailored recommendations for a personalized journey. Access a wealth of expertly curated content on prenatal care, common concerns, and tips for a smooth pregnancy experience. Seamlessly sync with wearable devices to gather additional health data, offering a comprehensive view of your well-being. Rest assured with robust privacy and security measures in place, safeguarding your sensitive information. Embrace this remarkable application, empowering you with invaluable tools and resources for a joyful and confident pregnancy journey.