

ARTIFICIAL INTELLIGENCE BASED CHATBOT FOR PATIENT HEALTHCARE

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in Computer Science and Engineering

By

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **GADIPARTHI SRINADH (40110356)** and **KAVALIPATI SAI KIRITI(40110580)** who carried out the Project entitled "**ARTIFICIAL INTELLIGENCE BASED CHATBOT FOR PATIENT HEALTHCARE**" under my supervision from November 2023 to April 2024.


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I, **KAVALIPATI SAI KIRITI (40110580)**, hereby declare that the Project Report entitled "**ARTIFICIAL INTELLIGENCE BASED CHAT BOT FOR PATIENT HEALTH CARE**" has been done by me under the guidance of **Dr. T. JUDGI, M.E., Ph.D** is submitted in partial fulfilment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering.

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ABSTRACT

In today's fast-paced world, access to quality healthcare is crucial for maintaining a healthy life. However, numerous barriers often hinder individuals from seeking timely medical attention, ranging from financial constraints to geographical limitations. To address these challenges, there is a growing interest in leveraging technological advancements, particularly through the development of medical chatbots powered by machine learning (ML) algorithms. These chatbots are designed to analyze ailments, provide essential information, and even facilitate discussions with healthcare professionals. By harnessing the power of artificial intelligence (AI), they aim to reduce medical costs and improve access to medical knowledge. Medical care is very important for a healthy life. However, it is very difficult to seek medical attention if you have a health problem. The recommended notion is to develop a medical Chatbot that can adopt ML to analyze the ailment and produce necessary information concerning the condition were discussing with a doctor. Medical chatbots were built to reduce medical costs and improve access to medical knowledge. Some chatbots serve as medical manuals to help patients become aware of their illness and improve their health. Users can assuredly benefit from chatbots if they can diagnose several kinds of illness and render the required data. Text Diagnosis Bot enables sufferers to join in analyses of their medicinal matters and present a personalized analysis report with reference to the symptoms. Therefore, people have opinions about their well-being and individual stability. In conclusion, the Text Diagnosis Bot project represents a significant step towards leveraging technology to enhance healthcare accessibility and affordability. By harnessing the capabilities of ML and AI, this innovative chatbot aims to revolutionize the way individuals engage with medical information and services. Through its user-centric design and personalized approach, it has the potential to positively impact the lives of millions by providing timely, accurate, and accessible medical guidance.

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CHAPTER 1

INTRODUCTION

Healthcare services are becoming increasingly digitalized, with the integration of AI technologies offering promising solutions to improve accessibility and efficiency. The development of a chatbot for healthcare aims to address common healthcare inquiries, provide immediate responses, and guide users towards appropriate resources or medical professionals if necessary. Medical chatbot has a high impact on the health culture of the state. It has improved reliability and is less prone to human errors. Today's people are more likely addicted to internet but they are not concerned about their personal health. They avoid hospital treatment for small issues which may become a major disease in future. This proposed idea solves this problem. This idea focuses on creating a chatbot which is free of cost and available throughout the day. The facts that the chatbot is free and can be accessed wherever the user is, be it their working environment, prompt the user to have it and use it. It saves the overhead involved in consulting specialized doctors. Machine Learning is now at its peak and chatbot is just one example of its use to contribute to progress. It should also be made clear that chatbots are not designed to diagnose patients. The idea presented was to use Machine Learning to create a medical chatbot that could provide some basic details about the disease before consulting a doctor. Text-to-text medical chatbots enable patients to talk about their medical problems and provide personalized diagnosis based on symptoms. The patient can then be transferred to a specialist. This sequence of things fundamentally saves the doctor's time. In turn, chatbots are always available to help people in need of medical assistance. In addition, the virtual assistant may be responsible for reminding users to take medication and monitoring the patient's health status. Generally, chatbots communicate with real people. Chatbots are used in applications such as e-commerce customer service, call centers and internet games. However, with a chatbot, one can communicate with a text or voice interface and get responses through Machine Learning.

1.1 BACKGROUND AND MOTIVATION

The realm of artificial intelligence (AI) has witnessed remarkable advancements in recent years, revolutionizing various aspects of our lives. Among its numerous applications, one area that stands out is the domain of public safety and security. Every year, countless individuals go missing, presenting an urgent challenge for law enforcement agencies worldwide. Traditional methods of search and rescue often prove to be time-consuming and resource-intensive, leaving families and authorities in a state of anguish and uncertainty. Motivated by the pressing need for more efficient and effective solutions, this project delves into the development of "Artificial intelligence based chatbot," a mobile application empowered by AI technologies. By harnessing the power of machine learning, image processing, and data analytics, Virtual Detectives aims to significantly enhance the process of locating missing persons, offering hope and relief to families in distress.

1.2 PROBLEM STATEMENT

Chat may be very useful to cause the ailment itself and provide the essential records. Automated text message diagnostics join sufferers with hospital treatment and offer customized diagnostics to aid their signs. Therefore, you should contend with your very own protection and protection.

1.3 OBJECTIVE AND SCOPE

The objective of an AI chatbot is to enhance user experience, automate tasks, provide support and assistance, and foster engagement. Its scope includes domain specificity, feature set, user interface, integration, scalability, and maintenance. The objective and scope of an AI chatbot can vary based on the specific needs and goals of its developers and users. However, in a general sense, the objective and scope of an AI chatbot typically revolve around providing efficient, personalized, and engaging interactions with users, typically in natural language. In summary, the objective of an AI chatbot is to improve user experience, automate tasks, provide support and assistance, and foster engagement, while its scope encompasses various aspects such as domain specificity, feature set, user interface, integration, scalability, and maintenance.

CHAPTER 2

LITERATURE SURVEY

In [1], The project presents "CureBot," an artificially intelligent interactive bot designed for medical diagnostics. With the rapid advancements in artificial intelligence (AI) and natural language processing (NLP), there is growing interest in leveraging these technologies to enhance healthcare services. CureBot is developed as a conversational AI platform capable of understanding user queries related to medical symptoms, providing diagnostic suggestions, and offering appropriate medical advice. The methodology section describes the technical approach used to develop CureBot. It covers aspects such as data collection, preprocessing, model architecture, and evaluation metrics. The authors likely detail the dataset used for training and testing, the selection of AI algorithms or frameworks, and any specific NLP techniques employed.

In [2], This project presents an exploration of deep learning techniques for the implementation of chatbots. With the surge in demand for intelligent conversational agents, deep learning has emerged as a prominent approach for enhancing the capabilities of chatbots. The research investigates various deep learning architectures and methodologies to improve the performance and natural language understanding of chatbot systems. The methodology section details the approach taken in the research, including the selection of deep learning techniques, dataset preparation, model training, and evaluation. The authors likely discuss the architecture of deep learning models such as recurrent neural networks (RNNs), convolutional neural networks (CNNs), or transformer-based models like BERT and GPT.

In [3], This paper introduces kBot, a knowledge-enabled personalized chatbot designed for asthma self-management. Asthma is a prevalent chronic condition that requires regular monitoring and management to improve patient outcomes. kBot utilizes a combination of knowledge representation, natural language processing (NLP), and machine learning techniques to provide personalized support and guidance to asthma patients in managing their condition effectively. provides background information on asthma as a chronic condition and highlights the importance of self-management in improving patient quality of life and reducing healthcare costs. It also outlines the motivation behind developing kBot and the objectives of the research.

In [4], This paper presents a comprehensive survey on chatbot conversational systems, exploring the evolution, methodologies, applications, challenges, and future directions in the field. Chatbots, also known as conversational agents, have gained significant attention in recent years due to advancements in natural language processing (NLP) and artificial intelligence (AI). The survey aims to provide insights into the state-of-the-art techniques, emerging trends, and potential use cases of chatbots across various domains. The growing popularity of chatbots and their increasing integration into various industries, including customer service, healthcare, education, and e-commerce. It highlights the importance of understanding the underlying methodologies and technologies driving chatbot development to harness their full potential.

In [5], This paper introduces a self-diagnosis medical chatbot leveraging artificial intelligence (AI) technologies. With the increasing availability of healthcare information online, there is a growing interest in utilizing AI-driven chatbots to provide personalized medical advice and assistance to users. The proposed chatbot aims to empower individuals to perform self-assessment of their health conditions and receive relevant recommendations based on their symptoms. It provides context for the development of the self-diagnosis medical chatbot and discusses the need for accessible and reliable healthcare information online. It highlights the potential of AI in transforming healthcare delivery and improving patient outcomes through innovative solutions such as chatbots.

2.1 INFERENCES FROM LITREATURE SURVEY

Chatbots are being developed for a wide range of applications within the healthcare domain, including self-diagnosis, medical triage, personalized recommendations, and general health information dissemination. Researchers are leveraging artificial intelligence (AI) and natural language processing (NLP) techniques to enhance the conversational capabilities of chatbots, enabling them to understand and respond to user queries more effectively. There is a focus on personalizing chatbot interactions to cater to individual user needs and preferences. Personalization may involve tailoring responses based on user input, medical history, symptoms, and other contextual factors. Chatbots are seen as tools to empower individuals to take control of their health by providing access to reliable medical information and support services. They aim to bridge gaps in healthcare accessibility and provide assistance beyond traditional healthcare settings. Despite the potential benefits, there are

challenges and ethical considerations associated with the development and deployment of healthcare chatbots. These may include concerns related to data privacy, accuracy of medical advice, bias in algorithms, and user trust. Efforts are being made to design chatbots with user experience in mind, ensuring intuitive interfaces, clear communication, and seamless interactions to enhance user engagement and satisfaction. There is recognition of the need for continuous improvement and validation of chatbot systems through rigorous testing, evaluation, and user feedback. This iterative process helps refine the chatbots' performance and address emerging needs and challenges.

2.2 OPEN PROBLEMS IN EXISTING SYSTEM

Natural language understanding(NLU): One of the primary challenges in chatbot development is improving the NLU capabilities to accurately interpret user queries, especially in complex domains like medicine where terminology can be highly specialized and nuanced.

Context Awareness: Chatbots often struggle with maintaining context over the course of a conversation, leading to misunderstandings or inappropriate responses. Enhancing context awareness is crucial for providing relevant and accurate assistance in healthcare scenarios where the context of the conversation can greatly influence the interpretation of user queries.

Medical Knowledge Base and Expertise: : Developing and maintaining a comprehensive medical knowledge base that encompasses a wide range of medical conditions, treatments, and procedures is a significant challenge. Chatbots need access to up-to-date and accurate medical information to provide reliable advice and recommendations.

Personalization and Individualization: Healthcare is inherently personal, and chatbots need to be able to tailor responses and recommendations to individual users' medical histories, preferences, and circumstances. Achieving effective personalization requires sophisticated algorithms and access to relevant user data while ensuring privacy and confidentiality.

Ethical and Legal Considerations: Chatbots operating in the healthcare domain must adhere to strict ethical and legal guidelines regarding patient confidentiality, data privacy, informed consent, and liability. Ensuring compliance with regulations such as HIPAA (Health Insurance Portability and Accountability Act) is essential but can be challenging given the complexity of healthcare data.

Diagnostic Accuracy and Safety: While chatbots can assist with medical triage and symptom assessment, there is a risk of misdiagnosis or providing inaccurate advice, which can have serious consequences for patient health and safety. Ensuring diagnostic accuracy and minimizing errors are critical priorities in healthcare chatbot development.

User Trust and Acceptance: Building user trust in healthcare chatbots is crucial for widespread adoption and utilization. Users must feel confident in the chatbot's capabilities and trust that their sensitive medical information will be handled securely and confidentially. Addressing concerns about reliability, accuracy, and privacy is essential for fostering trust.

Integration with Existing Healthcare Systems: Integrating chatbots with existing healthcare infrastructure, including electronic health records (EHR) systems, hospital information systems (HIS), and telemedicine platforms, presents technical.

CHAPTER 3

REQUIREMENT ANALYSIS

3.1 FEASIBILITY STUDIES/RISK ANALYSIS OF THE PROJECT

Feasibility:

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Technical Feasibility:

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

Economic Feasibility:

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

Operational Feasibility:

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed

to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

Risk Analysis:

Risks in Data Security and Privacy: One significant risk is the potential compromise of sensitive information related to missing persons. The project needs robust encryption protocols, access controls, and adherence to data protection regulations to mitigate the risk of unauthorized access and protect individual privacy.

Ethical Concerns: The deployment of AI in law enforcement raises ethical considerations, including biases in AI algorithms and potential misuse of technology. Addressing these concerns through ethical guidelines, transparency in AI decision-making, and regular audits can help mitigate ethical risks.

Technological Risks: The project's reliance on cutting-edge technologies introduces technological risks such as algorithmic errors, system malfunctions, or changes in technology landscape. Continuous monitoring, regular updates, and a responsive technical support system are necessary to address these risks.

Legal and Regulatory Risks: Compliance with legal frameworks and regulations surrounding the use of AI in law enforcement is crucial. Failure to adhere to these standards can result in legal consequences. Engaging legal experts to navigate these complexities and ensuring the project aligns with evolving regulations will mitigate legal risks.

3.2 SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT

Python: Python is a dynamic, high-level programming language known for its readability and versatility. In the context of "Chatbot," Python serves as the primary language for implementing the backend logic, machine learning models, and other AI components. Python's extensive ecosystem includes powerful libraries such as

TensorFlow, scikit-learn, and OpenCV, making it well-suited for developing sophisticated AI applications. Its ease of integration with various technologies contributes to the project's agility and adaptability.

VS Code (Visual Studio Code): VS Code is a lightweight, open-source code editor developed by Microsoft. It has gained widespread popularity for its user-friendly interface, extensive extensions, and support for a wide range of programming languages, including Python. VS Code enhances developer productivity with features like IntelliSense, debugging capabilities, and integrated version control. In the "Virtual Detectives" project, VS Code provides an efficient environment for writing, testing, and debugging Python code, facilitating collaboration and streamlining the development process.

PyQt5: PyQt5 is a set of Python bindings for the Qt application framework, allowing developers to create cross-platform desktop applications with a graphical user interface (GUI). In the context of "Virtual Detectives," PyQt5 is utilized for building the frontend of the application. It enables the creation of an intuitive and interactive user interface, essential for user engagement and efficient interaction with the AI-powered features of the project. PyQt5's flexibility and integration capabilities contribute to the overall usability and aesthetics of the application.

Algorithm:

NLP(Natural language processing): Natural Language Processing (NLP) is a pivotal component in the integration of AI chatbots within patient healthcare systems. These systems leverage NLP algorithms to comprehend and process human language, thereby facilitating interactive communication and personalized healthcare support. Here's a breakdown of how NLP is instrumental in AI chatbots for patient healthcare: NLP algorithms enable AI chatbots to decipher user input, including symptoms, medical history, and queries about healthcare information. By understanding the context of these inputs, chatbots can accurately assess symptoms, provide relevant medical advice, and direct users to appropriate healthcare resources or professionals. Incorporating vast medical knowledge bases, AI chatbots utilize NLP techniques to retrieve and present evidence-based

information regarding various medical conditions, treatments, medications, and preventive measures. This empowers users to make informed decisions about their health. Personalization is a key aspect of AI chatbots for patient healthcare, and NLP algorithms play a crucial role in tailoring responses and recommendations based on individual user profiles, preferences, and medical history. By analyzing user data, chatbots can offer personalized advice on lifestyle modifications, medication adherence, and disease management strategies. Appointment scheduling and management are streamlined with the help of NLP-powered chatbots. By understanding user preferences and availability, these chatbots can assist users in booking appointments, rescheduling visits, and sending reminders for upcoming appointments, thereby improving healthcare access and adherence to treatment plans. NLP algorithms enable chatbots to comprehend natural language input, understand synonyms, and generate human-like responses that are contextually relevant and informative. This ensures smooth and coherent conversations between users and chatbots, enhancing the overall user experience.

In summary, NLP plays a pivotal role in the development and deployment of AI chatbots for patient healthcare. By leveraging NLP algorithms effectively, these chatbots can provide intelligent, personalized, and accessible healthcare support to users, ultimately improving patient outcomes and enhancing the overall healthcare experience.

3.3 HARDWARE REQUIREMENTS

- Operating system : windows, linux
- Processor : minimum intel i3
- Ram : minimum 4 gb
- Hard disk : minimum 250gb
- Input Device : Keyboard, Mouse, Camera.

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

The proposed idea is to make a medical chatbot using AI which will diagnose the disease and supply basic details about the disease before consulting a doctor. to scale back the healthcare costs and improve accessibility to medical knowledge the medical chatbot is made. Few chatbots acts as reference books, which helps the patient find out about the illness and assists with improving their well being. The user is able to do the important advantage of a chatbot only it can diagnose all quite disease and supply necessary information. text-to-text diagnosis bot connects patients about their medical issues and gives a customized diagnosis to support their symptoms. Hence, people will have a thought about their health and have the proper protection.

The proposed medical chatbot utilizing AI technology aims to revolutionize patient healthcare by providing accessible, cost-effective, and personalized medical assistance. Here's a more detailed description of the AI-based chatbot for patient healthcare:

Diagnosis and Information Provision: The chatbot will utilize advanced AI algorithms to analyze symptoms provided by the user through a text-based interface. By understanding the symptoms, the chatbot will be able to provide a preliminary diagnosis and offer basic details about the suspected disease or condition. This information will empower users to have a better understanding of their health status before consulting a doctor.

Accessibility and Cost Reduction: One of the primary goals of the medical chatbot is to improve accessibility to medical knowledge and reduce healthcare costs. By providing initial diagnoses and information, the chatbot can help users determine whether they need to seek immediate medical attention or if their symptoms can be managed through self-care or non-urgent medical intervention. This can potentially reduce unnecessary doctor visits and alleviate the burden on healthcare systems.

Reference Book Functionality: Similar to a reference book, the chatbot will act as a comprehensive source of medical information. Users can access details about various illnesses, symptoms, treatment options, and preventive measures through the chatbot interface. This feature not only enhances users' understanding of their health conditions but also empowers them to make informed decisions regarding their healthcare.

Personalized Diagnosis and Support: Through sophisticated AI algorithms, the chatbot will provide personalized diagnoses based on the user's symptoms. It will consider various factors such as medical history, demographics, and current health status to offer tailored recommendations and support. This personalized approach enhances the accuracy and relevance of the diagnosis, ensuring that users receive the most appropriate guidance for their individual needs.

Text-to-Text Interface: The chatbot will feature a user-friendly text-to-text interface, allowing seamless communication between the user and the AI system. Users can input their symptoms, ask questions, and receive responses in natural language, making the interaction intuitive and accessible to individuals with varying levels of technological proficiency.

Overall, the AI-based medical chatbot represents a significant advancement in patient healthcare, offering timely assistance, accurate diagnoses, and valuable medical information to users worldwide. By leveraging the power of AI, this innovative solution has the potential to transform the healthcare landscape, improving outcomes, reducing costs, and enhancing accessibility to medical expertise.

4.1 SELECTED METHODOLOGY OR PROCESS MODEL

Selecting the appropriate methodology for developing an AI-based chatbot for patient healthcare involves considering various factors such as the complexity of the medical domain, the availability of data, the desired level of accuracy, and the intended user experience. Here's a suggested methodology:

Requirement Analysis: Start by conducting a thorough analysis of the requirements for the chatbot. Define the target audience, the specific medical conditions or symptoms it will address, and the functionality it will offer, such as diagnosis, information provision, and personalized support.

Data Collection and Annotation: Gather relevant data sources, including medical literature, patient records, and publicly available healthcare databases. Annotate the data with relevant labels, such as symptoms, diagnoses, treatments, and outcomes, to facilitate machine learning model training.

Model Selection: Choose suitable AI models for natural language processing (NLP) and machine learning tasks based on the project requirements. Common choices include deep learning models like recurrent neural networks (RNNs), convolutional neural networks (CNNs), and transformer-based architectures such as BERT or GPT.

Training Data Preparation: Prepare the training data by preprocessing and cleaning the collected data. This may involve tokenization, normalization, and feature extraction to convert textual data into a format suitable for model training.

Model Training: Train the selected AI models using the annotated data. Fine-tune pre-trained models or train from scratch, depending on the available resources and the complexity of the task. Implement techniques such as transfer learning to leverage pre-trained models for specific healthcare tasks.

Evaluation and Validation: Evaluate the trained models using appropriate metrics such as accuracy, precision, recall, and F1 score. Validate the performance of the chatbot through rigorous testing, including simulated user interactions and real-world usage scenarios.

Iterative Development: Iterate on the development process based on feedback from domain experts, healthcare professionals, and end-users. Continuously refine the chatbot's capabilities, improve its accuracy, and enhance its usability to meet the evolving needs of patients and healthcare providers.

Deployment and Integration: Deploy the AI-based chatbot on a suitable platform, such as a web application, mobile app, or messaging platform. Integrate the chatbot with existing healthcare systems, electronic health records (EHRs), and telemedicine platforms to ensure seamless communication and interoperability.

Monitoring and Maintenance: Monitor the performance of the deployed chatbot in real-time and address any issues or errors that arise. Provide regular updates and maintenance to keep the chatbot up-to-date with the latest medical knowledge, guidelines, and best practices.

Compliance and Security: Ensure compliance with regulatory requirements such as HIPAA (Health Insurance Portability and Accountability Act) for handling sensitive patient data. Implement robust security measures to protect the confidentiality and integrity of patient information throughout the chatbot's lifecycle.

information to track movements and identify patterns. The methodology also embraces a collaborative ethos by establishing partnerships with law enforcement agencies, non-profit organizations, and the broader community. in the utilization of sensitive data. Continuous monitoring and updates to the AI model are imperative, reflecting the evolving nature of technological advancements . The iterative nature of the methodology, coupled with ongoing feedback loops, facilitates a continuous improvement cycle that refines the AI's capabilities over time.

4.2 ARCHITECTURE / OVERALL DESIGN OF PROPOSED SYSTEM

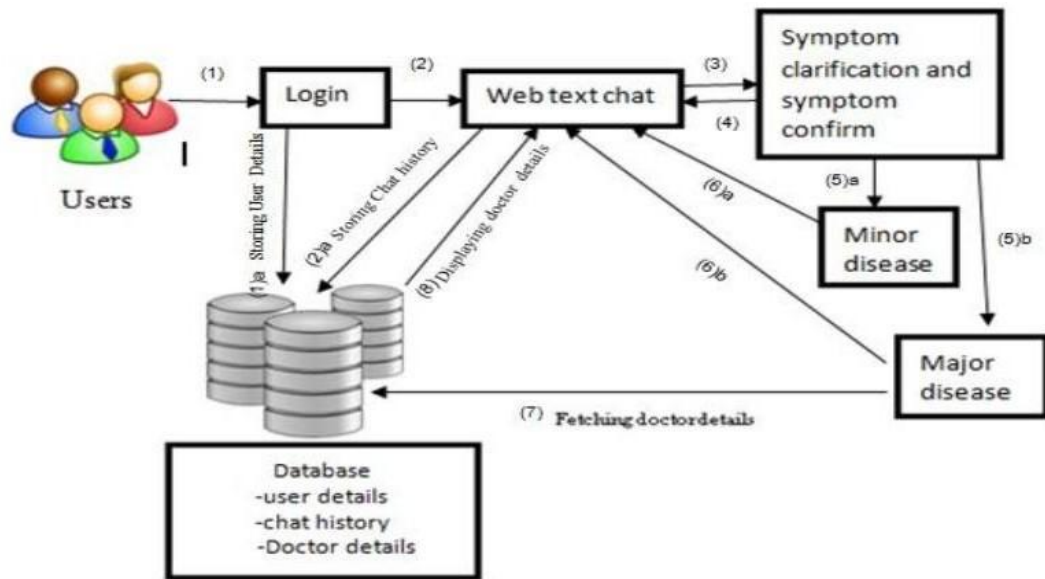


Fig 4.2: System Architecture of the application

The system architecture of an AI-based chatbot typically comprises several interconnected components designed to enable natural language processing, dialogue management, and seamless interaction with users. It leverages advanced machine learning and AI algorithms to deliver intelligent responses and personalized experiences.

4.3 MODULES:

- User Validation And Extraction Of Symptoms
- Extracted Symptoms With Trained Datasets
- Specifying The Disease And Referring A Doctor

MODULE DESCRIPTION

4.3.1 User Validation And Extraction Of Symptoms:

The validation of the user login details occurs here. Then Symptoms are extracted using String Searching Algorithm where substring representing the symptoms is identified in the natural language text input. When users give directly the symptom name such as the system will identify it. But however, the system should also be able to handle input like, "When I read, I'm okay at first, but over time, my eyes seem to get tired, and I start to see double." In this case, the system should extract words like "eyes tired" and "see double" (and not substrings like "read" or "okay").

4.3.2 Extracted Symptoms With Trained Datasets:

Given some substring from the user's input, we generate a list of suggested closest symptoms. We then ask the user to confirm if they have any of the symptoms from the suggested ones. Based on their reply few diseases are being shortlisted. Then further symptom clarification and symptom suggestions are being done by asking the users a series of questions and the mapping of the symptoms to the exact disease is done.

4.3.3 Specifying The Disease And Referring A Doctor:

This process carries the list of diseases in the database and each symptom being entered is compared to the symptoms of the common diseases. The next symptom is checked until a matching symptom is found. They are shortlisted based on the end user's input on the question evaluation. The accurate disease is identified and specified to the end user by the chatbot. The chatbot checks whether the identified disease is a major issue or minor issue based on the conditions built in the chatbot. If it is a major issue the chatbot refers a specialist to the end user by sending the doctor details. And if it is a minor issue the chatbot specifies the disease and alerts the end user with first aid or remedy and asks to visit a doctor shortly.

DATA FLOW DIAGRAM:

The DFD is also called as bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data is generated by this system. The data flow diagram (DFD) is one of the most important modeling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system and the information flows in the system. DFD shows how the information moves through the system and how it is modified by a series of transformations. It is a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output.

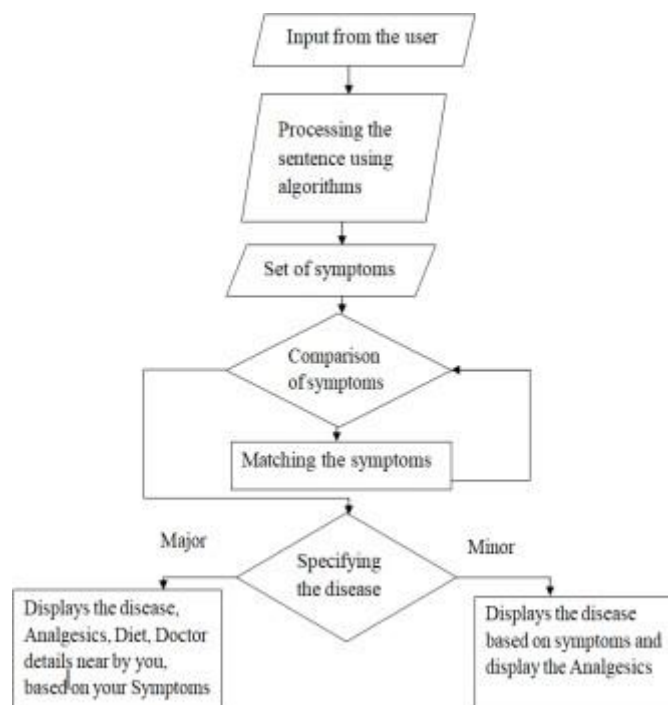


Fig no: 4.1 DataFlow Diagram

UML DIAGRAMS

UML stands for Unified Modeling Language. UML is a standardized general-purpose modeling language in the field of object-oriented software engineering. The standard is managed, and was created by, the Object Management Group. The goal is for

UML to become a common language for creating models of object oriented computer software. In its current form UML is comprised of two major components: a Meta-model and a notation. In the future, some form of method or process may also be added to; or associated with, UML. The Unified Modeling Language is a standard language for specifying, Visualization, Constructing and documenting the artifacts of software system, as well as for business modeling and other non-software systems. The UML is a very important part of developing objects oriented software and the software development process. The UML uses mostly graphical notations to express the design of software projects.

USE CASE DIAGRAM :

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

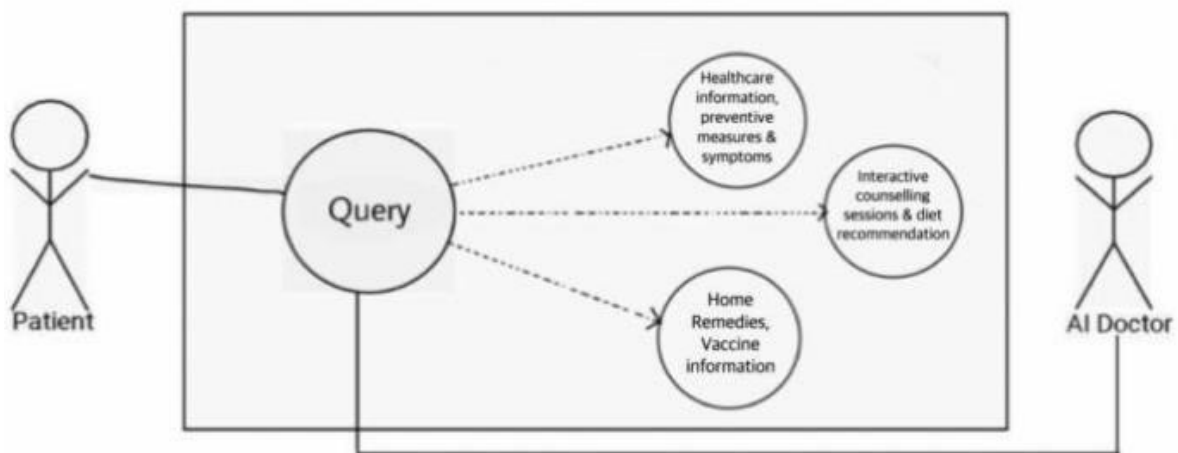


Fig no:4.2 UseCase Diagram

SEQUENCE DIAGRAM:

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

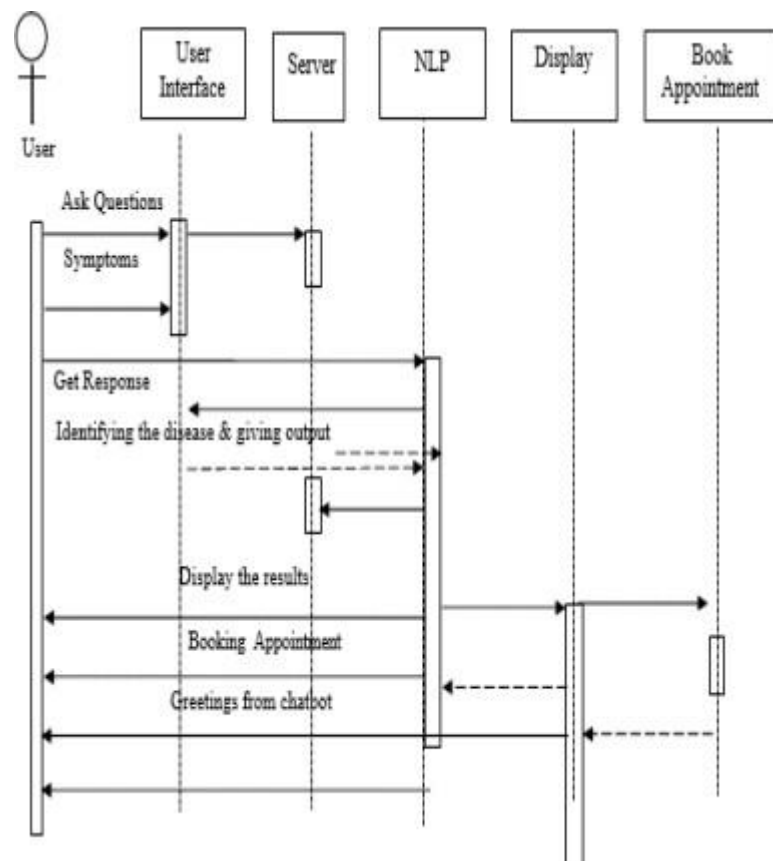


Fig no:4.3 Sequence Diagram

4.4 DESCRIPTION OF SOFTWARE FOR IMPLEMENTATION AND TESTING PLAN OF THE PROPOSED MODEL/SYSTEM

SYSTEM TESTING:

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring

that the

Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

TYPES OF TESTS

Unit testing:

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

Integration testing:

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfactory, as shown by successful unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Functional test:

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.
Invalid Input : identified classes of invalid input must be rejected.
Functions : identified functions must be exercised.
Output : identified classes of application outputs must be exercised.
Systems/Procedures: interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

System Test:

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

White Box Testing;

White Box Testing is a testing in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing;

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot “see” into it. The test provides inputs and responds to outputs without

considering how the software works.

4.4.1 Unit Testing:

Unit testing is usually conducted as part of a combined code and unit test phase of the software lifecycle, although it is not uncommon for coding and unit testing to be conducted as two distinct phases.

4.4.2 Integration Testing

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

The task of the integration test is to check that components or software applications, e.g. components in a software system or — one step up — software applications at the company level — interact without error.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

4.4.3 Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

.

Regular reviews and updates of the project management plan will ensure its relevance and effectiveness throughout the project lifecycle. Monitoring and adjustments will be made as necessary to ensure the project remains on track, within budget, and meets its quality objectives.

4.5 TRANSITION / SOFTWARE TO OPERATIONS PLAN

Transitioning the AI-based chatbot for patient healthcare from development to operations requires careful planning to ensure a smooth deployment and ongoing functionality. Here's a software to operations plan:

Transitioning the AI-based chatbot for patient healthcare from development to operations requires careful planning to ensure a smooth deployment and ongoing functionality. Here's a software to operations plan:

Deployment Strategy:

- Identify the target platforms for deploying the chatbot, such as web portals, mobile applications, or messaging platforms.
- Determine the deployment schedule and allocate resources for setting up the infrastructure and integrating the chatbot with existing systems.
- Develop deployment scripts and procedures to automate the deployment process and minimize downtime.

Infrastructure Setup:

- Set up the necessary infrastructure for hosting the chatbot, including servers, databases, and networking components.
- Choose a reliable hosting provider or cloud service that meets the scalability, performance, and security requirements of the chatbot.
- Configure monitoring tools and alerts to track system performance, detect issues, and ensure high availability.

Integration with Healthcare Systems:

- Integrate the chatbot with electronic health record (EHR) systems, patient management software, and telemedicine platforms to access patient data and provide personalized recommendations.
- Implement secure data exchange protocols, such as HL7 (Health Level

Seven) standards, to ensure interoperability and compliance with healthcare regulations.

User Training and Support:

- Provide training sessions and documentation for healthcare professionals, administrators, and end-users on how to use the chatbot effectively.
- Offer technical support and troubleshooting assistance to address any issues or questions that arise during the initial rollout and beyond.

Security and Compliance:

- Implement robust security measures to protect patient data and ensure compliance with healthcare regulations, such as HIPAA.
- Conduct regular security audits and vulnerability assessments to identify and mitigate potential risks to the chatbot and its infrastructure.
- Establish procedures for handling security incidents, data breaches, and compliance violations in accordance with industry best practices.

CHAPTER 5

RESULTS AND DISCUSSION

By the use of synthetic intelligence remedy chatbots, the consumer can be able to do voice communication and get particular desired outcomes within the shape of voice. The person can solution special and widespread questions saved within the database. Chatbot overall performance relies upon at the Raspberry Pi and database. The foremost reason of the fitness care chatbot machine is to offer offerings to humans in rural and authorities hospitals who'reunable to e-book an appointment with a doctor or acquire medical facts. They can solve their problem the use of chatbot. The synthetic intelligence based chatbot gadget gives clinical tips on drugs or sicknesses and is to be had 24*7 hours. With the speech signal input thru the microphone, it's miles compared to the database saved at the Raspberry Pi and remarks is obtained from the database. If the description of the query or the facts associated with the disorder and remedy is not available in the database, the answer will be dispatched from the Google servers.

5.1 GUI Appearance—



Fig no. 5.1 1 GUI Appearance

In fig no.5.1 The administrator login page grants access with the correct username and password, ensuring a secure entry into the application. This feature enhances

system security by validating user credentials and safeguarding sensitive information from unauthorized access.

5.2 Login to the page–

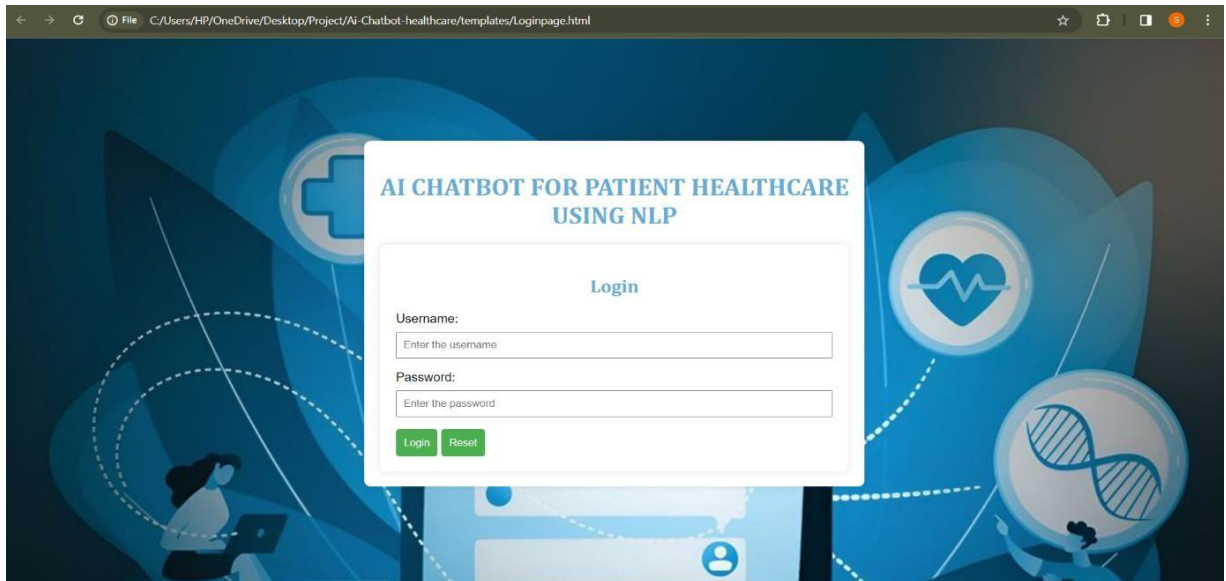


Fig no:5.2:Login Page

In fig 5.2 After logging in, users will have the platform to add/register . Here, they can input all the necessary details of the corresponding to disease, from name to contact information, and proceed to submit for broadcasting to the public through the applicatio

5.3 Main page

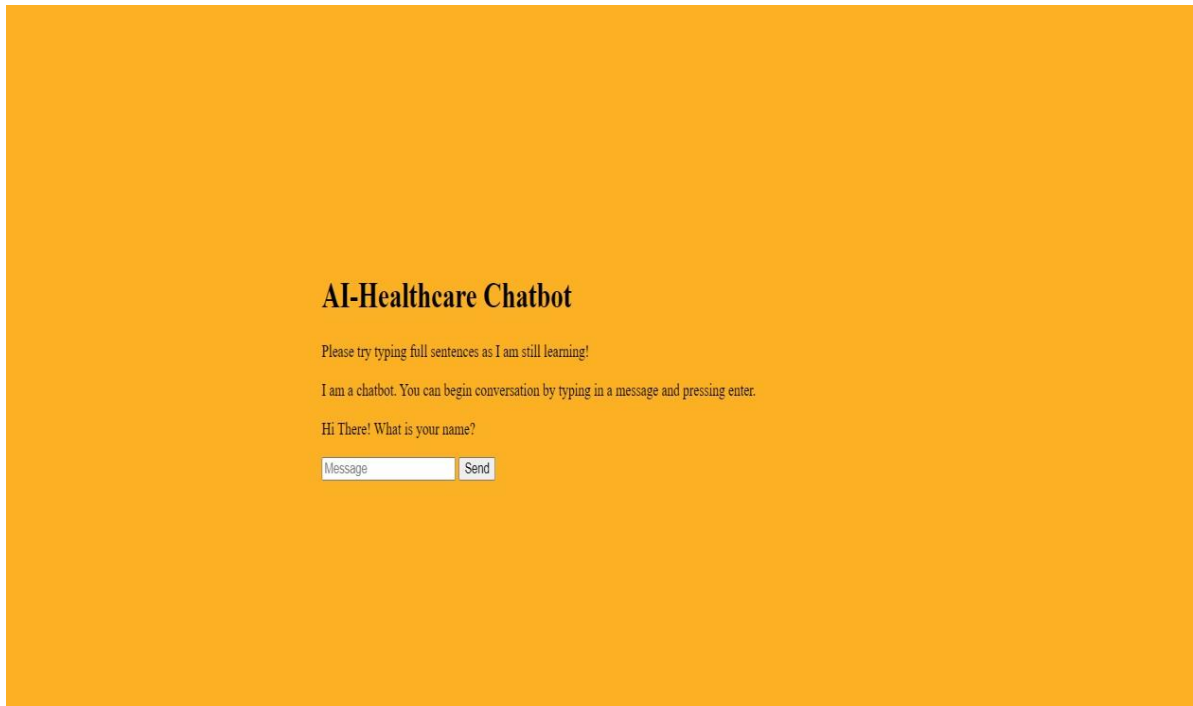


Fig no:5.3:Main page

In fig 5.3 Once the application receives responses, administrators can initiate the matching process to proceed with it. By comparing the received information against the registered details , administrators can identify potential matches and narrow down search efforts. This matching process is crucial for cross-referencing sightings, tips, or other relevant information provided by the public

CHAPTER 6

CONCLUSION

The development and implementation of an AI-based chatbot for patient healthcare have been significant endeavors, aimed at improving accessibility and efficiency in the healthcare sector. The introduction of an AI-based chatbot has significantly enhanced accessibility to healthcare services. Patients can now easily access medical advice and information anytime and anywhere, reducing the need for physical appointments, especially for non-urgent concerns. One of the primary advantages of the AI chatbot is its round-the-clock availability. Patients no longer have to wait for business hours to seek medical advice. This availability ensures prompt responses to queries and concerns, leading to improved patient satisfaction and outcomes. Implementing an AI-based chatbot has proven to be a cost-effective solution for healthcare providers. It reduces the burden on medical staff, allowing them to focus on critical tasks, while routine inquiries can be efficiently handled by the chatbot. By providing patients with instant access to healthcare information and guidance, the AI chatbot empowers them to take proactive steps towards managing their health. It educates patients about various health conditions, treatment options, and preventive measures, fostering a sense of empowerment and autonomy in healthcare decision-making. Despite its benefits, the implementation of an AI-based chatbot also presents challenges and limitations. These may include concerns regarding data privacy and security, potential biases in the algorithms, and the inability to handle complex medical emergencies requiring human intervention. Addressing these challenges is essential to ensuring the safe and effective use of AI in healthcare.

In conclusion, the development and deployment of an AI-based chatbot for patient healthcare have demonstrated significant potential in improving accessibility, efficiency, and patient empowerment in healthcare delivery. While challenges exist, the ongoing refinement and advancement of AI technology offer promising opportunities for enhancing healthcare services and improving patient outcomes.

6.1 RESULTS

Certainly, let's break down the key features of the "Artificial Intelligence Based chatbot for patient healthcare" project:

Advanced AI Technologies:

- Natural language processing for analyzing textual data
- Geospatial analysis for location-based insights

User Engagement and Collaboration:

- Interactive forums for community engagement
- Reporting interfaces for users to contribute information
- Real-time updates to keep the community informed

Ethical Considerations and Privacy Safeguards:

- Robust data security measures
- Transparent consent mechanisms

Transition/Software to Operations Plan (TSOP):

- Clear objectives for seamless transition
- Delineated team roles for coordination
- Phased approach for minimal disruptions

Community Vigilance:

- Transformation of individuals into proactive participants
- Engagement through forums and reporting interfaces
- Active community involvement in addressing missing persons cases

Continuous Technological Advancements:

- Regular updates and enhancements to application algorithms
- Adaptation to evolving technological challenges

Collaborations:

- Partnerships with law enforcement agencies
- Collaboration with NGOs and stakeholders
- Potential for international adoption and customization.

6.2 FUTURE WORK

The future work for AI-based chatbots in healthcare encompasses a broad range of advancements and refinements to further enhance their capabilities and impact. Enhance the chatbot's ability to understand and interpret natural language inputs more accurately, including nuances, colloquialisms, and context. This could involve leveraging advanced NLP (Natural Language Processing) techniques, such as deep learning models trained on large healthcare-specific datasets. Develop chatbots capable of personalizing interactions based on individual patient profiles, medical history, preferences, and contextual factors. This could involve integrating electronic health records (EHR) and other patient data sources to provide tailored recommendations and support. Enable chatbots to support multi-modal interaction, including voice, text, and visual inputs. This would improve accessibility for users with different communication preferences or limitations and allow for more versatile and intuitive interactions.

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APPENDIX

A. SOURCE CODE

```
from chatterbot import ChatBot, utils
from chatterbot.trainers import ListTrainer
import os

try:
    os.remove("db.sqlite3")
    print("Old database removed. Training new database")
except FileNotFoundError:
    print('No database found. Creating new database.')

english_bot = ChatBot('Bot')
english_bot.set_trainer(ListTrainer)

for file in os.listdir('data'):
    print('Training using ' + file)
    convData = open('data/' + file, 'r').readlines()
    english_bot.train(convData)
    print("Training completed for " + file)

from flask import Flask, render_template, request
from flask import Flask, render_template, request, redirect, url_for
from chatterbot import ChatBot
from chatterbot.trainers import ChatterBotCorpusTrainer
import os

from chatterbot import ChatBot
from chatterbot.trainers import ListTrainer

filenumber=int(os.listdir('saved_conversations')[-1])
filenumber=filenumber+1
file= open('saved_conversations/'+str(filenumber),"w+")
file.write('bot : Hi There! I am a medical chatbot. You can begin conversation by
```

```
typing in a message and pressing enter.\n')
file.close()
```

```
app = Flask(__name__)
```

```
english_bot = ChatBot('Bot',
                      storage_adapter='chatterbot.storage.SQLStorageAdapter',
                      logic_adapters=[
                          {
                              'import_path': 'chatterbot.logic.BestMatch'
                          },
                      ],
                      trainer='chatterbot.trainers.ListTrainer')
english_bot.set_trainer(ListTrainer)
```

```
# Define the expected username and password
expected_username = 'admin'
expected_password = 'admin'
```

```
@app.route('/')
def login_page():
    return render_template('Loginpage.html')
```

```
@app.route('/login', methods=['POST'])
def login():
    username = request.form['username']
    password = request.form['password']

    if username == expected_username and password == expected_password:
        # Successful login, redirect to index page
        return redirect(url_for('index_page'))
    else:
```

```

        # Invalid username or password, show an error message
        return render_template('Loginpage.html', error_message='Enter a Valid
Username and Password')

```

```

@app.route("/home")
def home_page():
    return render_template("home.html")

```

```

@app.route("/index")
def index_page():
    return render_template("index.html")

```

```

@app.route("/get")
def get_bot_response():
    userText = request.args.get('msg')
    response = str(english_bot.get_response(userText))

```

```

    appendfile=os.listdir('saved_conversations')[-1]
    appendfile= open('saved_conversations/'+str(filename),"a")
    appendfile.write('user : '+userText+'\n')
    appendfile.write('bot : '+response+'\n')
    appendfile.close()

```

```

    return response

```

```

if __name__ == "__main__":
    app.debug = True
    app.run()

```

```

<style type="text/css">
    .fixed-panel {
        min-height: 400px;
        max-height: 400px;
        background-color: #19313c;
    }

```

```

    color: white;
    overflow: auto;
}
.media-list
{ overflow:
  auto;clear:
  both; display:
  table;
  overflow-wrap: break-word;
  word-wrap: break-word;
  word-break: normal;
  line-break: strict;
}
.panel {
  margin-bottom: 20px;
  background-color: #fff;
  border: 6px solid transparent;
  border-radius: 25px;
  -webkit-box-shadow: 0 1px 1px rgba(0,0,0,.05);
  box-shadow: 0 1px 1px rgba(0,0,0,.05);
}
.panel-info {
  border-color: #0c2735;
}
.panel-info>.panel-heading
{color: white;
background-color: #0c2735;
border-color: #0c2735;
}
.panel-footer { padding:
  10px 15px;
  background-color: #0c2735;
  border-top: 1px solid #0c2735;
  border-bottom-right-radius: 3px;
  border-bottom-left-radius: 3px

```

```

    }
    body {
        background: rgb(252, 177, 37); /* Old browsers */
        background: -moz-linear-gradient(-45deg,    rgba(96,143,149,1)    0%,
        rgba(0,133,136,1) 9%, rgba(12,36,73,1) 52%, rgba(26,30,59,1) 100%); /* FF3.6-15
        */

        margin-top: 16%;
        margin-left: 25em;
    }
</style>
<style type="text/css">
    .fixed-panel {
        min-height: 400px;
        max-height: 400px;
        background-color: #19313c;
        color: white;
        overflow: auto;
    }
    .media-list
    { overflow:
    auto;clear:
    both; display:
    table;
    overflow-wrap: break-word;
    word-wrap: break-word;
    word-break: normal;
    line-break: strict;
    }
    .panel {
        margin-bottom: 20px;
        background-color: #fff;
        border: 6px solid transparent;
        border-radius: 25px;
        -webkit-box-shadow: 0 1px 1px rgba(0,0,0,.05);
        box-shadow: 0 1px 1px rgba(0,0,0,.05);

```

```

    }
    .panel-info {
        border-color: #0c2735;
    }
    .panel-info>.panel-heading
        {color: white;
        background-color: #0c2735;
        border-color: #0c2735;
    }
    .panel-footer { padding:
        10px 15px;
        background-color: #0c2735;
        border-top: 1px solid #0c2735;
        border-bottom-right-radius: 3px;
        border-bottom-left-radius: 3px
    }
    body {
        background: rgb(252, 177, 37); /* Old browsers */
        background: -moz-linear-gradient(-45deg,    rgba(96,143,149,1)    0%,
        rgba(0,133,136,1) 9%, rgba(12,36,73,1) 52%, rgba(26,30,59,1) 100%); /* FF3.6-15
*/
        margin-top: 16%;
        margin-left: 25em;
    }
</style>

```

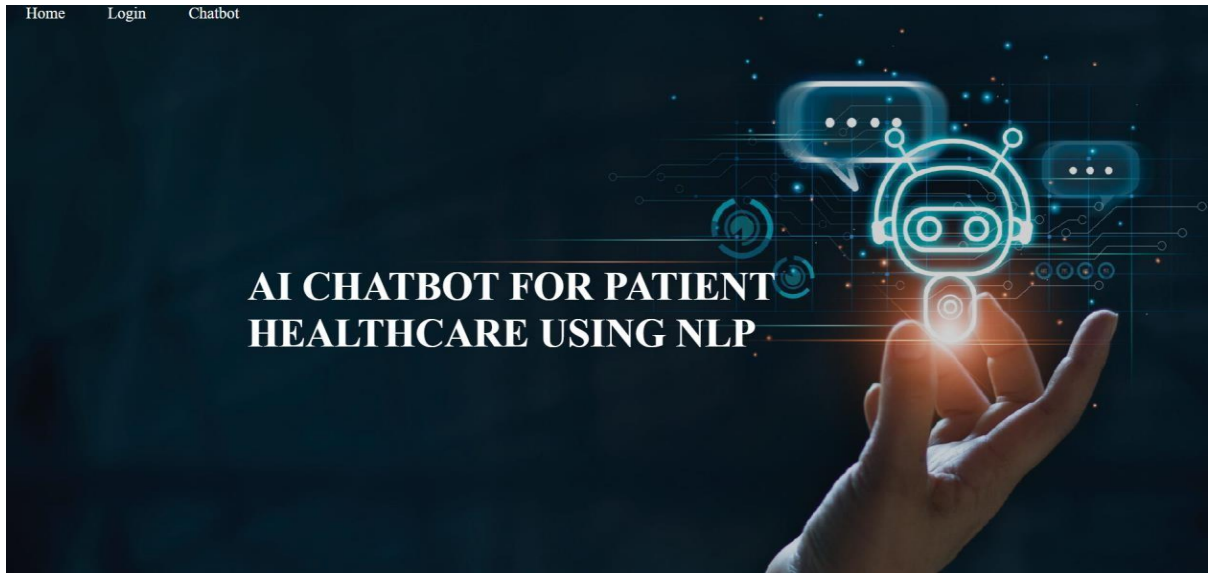
- - What are your interests
 - I am interested in helping you medically!
- - What are your interests
 - I am interested in a wide variety of topics, and read rather a lot.
- - What is your number
 - You can contact the helpline at +91 9999 11111
- - What is your number
 - You can contact the helpline at +91 9999 11111
- - What is your location

- We are located at Dwarkadas J. Sanghvi College of Engineering as of now.
- - What is your location
 - I am offline. So I am present at the same location as you.
- - Where are you from
 - I am offline. at Dwarkadas J. Sanghvi College of Engineering as of now.
- - Who is your father
 - Automated healthcare team created me.
- - Who is your mother
 - Automated healthcare team created me.
- - What is your age
 - I was created in February 2019.
- - are you online?
 - no i am completely offline
- - My nose is choked.
 - Okay, this is a symptom of cold, do you have cold?
- - yes i have cold.
 - You should take a sudafed tablet after your meal.
- - Ok, i will take the sudafed tablet.
 - let me know if you are feeling better after having sudafed tablet.
- - I took the sudafed tablet.
 - Good, now take some rest and then let me know if you are feeling better after having sudafed tablet.
- - No, i am still not felling better after having sudafed tablet.
 - Ok, its not just a normal cold, you should consult a doctor.
- - Can u book an appointment for me.
 - yes please state time and doctor's name in the following format; 'Patient Name: Date: Doctor: Hospital:'
- - I have a cough.
 - You should take a spoon full of benadryl after your meal.
- - Ok, i will take the benadryl.
 - let me know if you are feeling better after having benadryl.
- - I took the dose of benadryl.
 - Good, now take some rest and then let me know if you are feeling better after

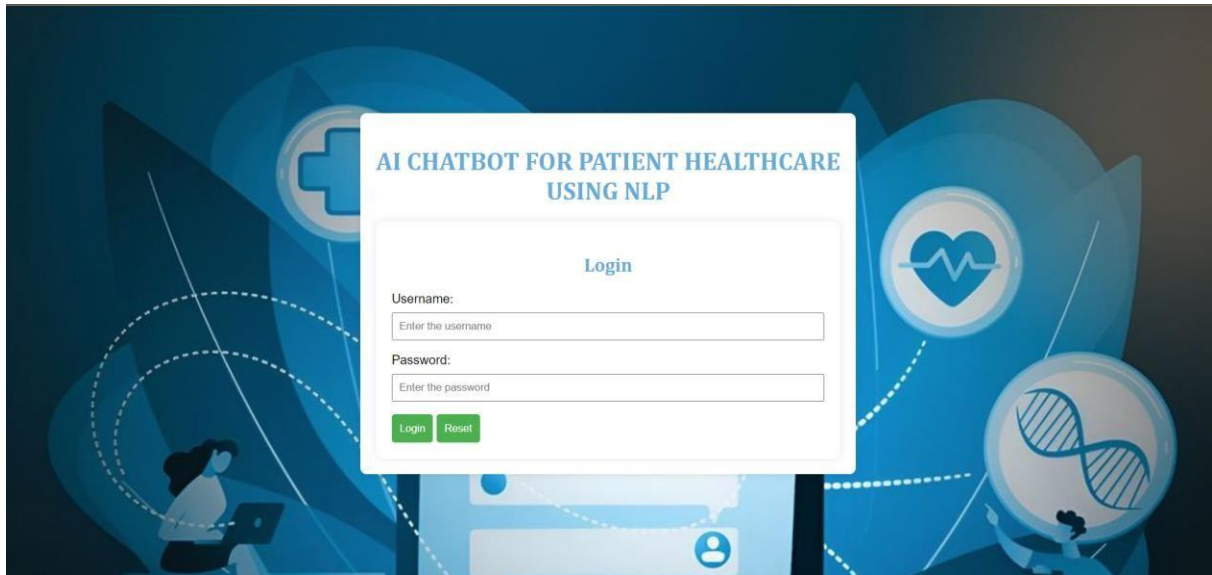
having benadryl.

- - No, i am still not felling better after having benadryl.
- Ok, its not just a normal cough, you should consult a doctor.
- Can u book an appointment for me.
- yes please state time and doctor's name in the following format; 'Patient Name: Date: Doctor: Hospital:'
-
- - I have a cold.
- You should take a sudafed tablet after your meal.
- - Ok, i will take the sudafed tablet.
- let me know if you are feeling better after having sudafed tablet.
- - I took the sudafed tablet.
- Good, now take some rest and then let me know if you are feeling better after having sudafed tablet.
- - No, i am still not felling better after having sudafed tablet.
- Ok, its not just a normal cold, you should consult a doctor.
- - Can u book an appointment for me.
- yes please state time and doctor's name in the following format; 'Patient Name: Date: Doctor: Hospital:'
- - My chest is aching.
- Okay, this is a symptom of cough , do you have cough?
- - yes i have cough.
- You should take a spoon full of benadryl after your meal.
- - Ok, i will take the benadryl.
- let me know if you are feeling better after having benadryl.
- - I took the dose of benadryl.
- Good, now take some rest and then let me know if you are feeling better after having benadryl.
- - No, i am still not felling better after having benadryl.
- Ok, its not just a normal cough, you should consult a doctor

B. SCREENSHOTS



1. For the admin, the login page provides secure access to the application's administrative panel, granting them exclusive control over critical functionalities and sensitive data. Upon entering the correct username and password, authenticated admins gain access to a suite of tools and features tailored to aid in the search and management of missing persons. This includes capabilities such as uploading missing person reports, analyzing search results, and managing user permissions. On the other hand, for the general public, the login page offers access to a more limited set of features geared towards facilitating collaboration and engagement in the search efforts. Users are typically required to create an account or log in using existing credentials to access functionalities such as submitting tips or sightings, viewing missing person reports, and receiving updates on ongoing investigations. By logging in, members of the public contribute to the collective effort of locating missing individuals, leveraging the power of community involvement and crowdsourcing. The login page plays a crucial role in ensuring the security and integrity of the application by authenticating users and controlling access to sensitive functionalities and data. By providing separate login portals for administrators and the general public, the application effectively balances the need for robust security measures with the principles of inclusivity and community engagement.



2. Upon logging in, authenticated administrators access a dedicated section for new case registration. Here, they input essential details such as name, age, physical description. Crucially, administrators are prompted to upload images of the missing individual, providing visual references to aid in identification. Additionally, they may add further context, including known circumstances surrounding the disappearance or relevant medical conditions. Once all information is entered, the case is submitted for review, ensuring accuracy and completeness. Upon confirmation, the case is added to the application's database, becoming accessible to both administrators and the general public. Depending on settings, the case may be immediately broadcasted to facilitate community involvement in the search efforts.

AI-Healthcare Chatbot

Please try typing full sentences as I am still learning!

I am a chatbot. You can begin conversation by typing in a message and pressing enter.

Hi There! What is your name?

3. Once the application receives responses, administrators can initiate the matching process to proceed with it. By comparing the received information against the registered details, administrators can identify potential matches and narrow down search efforts. This matching process is crucial for cross-referencing sightings, tips, or other relevant information provided by the public

ARTIFICIAL INTELLIGENCE BASED CHAT BOT FOR PATIENT HEALTH CARE

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ABSTRACT- Medical care is vital to a healthful lifestyles. But it's far more difficult to get scientific help if you have health issues. The proposed idea is to expand a scientific Chatbot which could use ML to investigate the ailment and generate the essential facts to talk about the condition with the medical doctor. Medical discourses had been created to lessen scientific charges and improve get right of entry to clinical know-how. Some Chatbot act as clinical publications, assisting sufferers study their disorder and enhance their health. Users can actually advantage from Chatbot's if they are able to become aware of types of diseases and offer the vital facts. Automated textual content-primarily based diagnostics allow sufferers to engage inside the analysis of their medical issues and offer personalized evaluation with signs. Therefore, humans reflect on consideration on their very own proper and personal balance.

Keywords: AI, AI Chatbot, AI Chatbot structure, AI health Chatbot's, health Chatbot.

INTRODUCTION

Healthcare Chatbot's are having a massive impact on public health way of life. It increased faith and decreased human error. Today's people are addicted to the net however they don't care approximately their non-public protection. They keep away from hospitalization for minor troubles which could turn into severe illnesses within the future. The proposed concept solves this trouble. The idea is to create a Chatbot this is free and available 24/7. The Chatbot is loose and to be had to the consumer anyplace there, whether they may be working in their surroundings, which encourages the consumer to keep and use it.

This saves capital expenses for professional session. Machine mastering is at its height right now and is one example of the use of Chatbot to facilitate progress. It have to also be clarified that the reason of the Chatbot isn't always to diagnose sufferers. The concept became to create a medical chat the use of system learning that might offer a few basic facts approximately the sickness before consulting a doctor. Text-based totally clinical Chatbot help patients percentage their clinical worries and offer a customized diagnosis primarily based on symptoms. After this the affected person may be dispatched to a specialist. This collection of activities saves quite a few time for the instructor. Now, Chatbot are usually ready to help individuals who need scientific assist. In addition, a virtual assistant may be chargeable for reminding customers of medicines and tracking the affected person's fitness popularity. By speaking fluently, Chatbot have interaction with real people. Chatbot are used in applications which includes e-trade customer service, name facilities and on-line games. However, with Chatbot, you can engage with a textual content or voice interface and get answers through system getting to know.

PROBLEM STATEMENT AND OBJECTIVE

Chat may be very useful to cause the ailment itself and provide the essential records. Automated text message diagnostics join sufferers with hospital treatment and offer customized diagnostics to aid their signs. Therefore, you should contend with your very own protection and protection.

LITERATURE SURVEY

Literature review is a crucial step in the software program improvement manner. Before the tool is

advanced, it's far important to decide the time elements, price range and strengths of the enterprise. With all these conditions met, the following step is to determine which working gadget and language could be used to increase the tool. When programmers begin developing a device, they will want extra help. This assist can be acquired from senior applications, books or web sites. Before designing the system, the above factors are saved in mind whilst designing the gadget. A main part of the undertaking development branch's work is to do all the correct analyzes which can be required to expand the assignment. Literature review is the most crucial place of software improvement for any project. Before developing the equipment and the related plan, it's far vital to perceive and examine the elements of time, aid requirements, manpower, financial and organizational strengths. After a lot of these questions had been responded and the research executed, the following step is to decide the specification of the software in the computer venture, what kind of working system can be required for the motive, and what software can be required for the venture. Paintings making tracks like system and related sports.

Clinical Chatbot Using Deep Learning

Chatbot software communicates with clients using natural language processing in text or electronic mail shape. In modern instances, considered one of the largest demanding situations going through India is to provide high-quality and low cost healthcare services to its growing populace without price-effectiveness. At present, it's far difficult to provide health offerings, as we see the situation in India getting worse because of the dearth of delivery, the potential of medical doctors and hospitality within the crisis of covid 19. This sometimes causes people to postpone treatment and will increase the number of deaths. Our aim is to increase an AI-based totally Chatbot for scientific prognosis using deep mastering, particularly focused on the agricultural regions of ours. And the needy and terrible people. Our system is able to information the patient's signs and symptoms and communicating with the affected person (quit person) through a web interface. Our enterprise attempts to resolve the hassle with the help of the signs stated by the patient and enables them in prescribing the right antibiotics/medicinal drugs and precautions. NLTK

(Natural Language Toolkit) is a Python module/software which could implement symbolic and statistical herbal language processing for programming written in English. It is used to investigate enter information in speech format and generate human-type responses.

Contextual Care Chatbot (Through Deep Learning)

As the demand for device learning and artificial intelligence increases, new technology are coming into the market that contact our day by day activities and one such technology is virtual assistant robots or Chatbot. Chatbot advanced from buttons, buttons, and now context. The predecessor to all of the above is context-primarily based, because it uses device studying and artificial intelligence to save and process abilities. In this article, we can no longer most effective discuss the functionality of our version, but we are able to additionally speak the packages and paintings that has been executed on this vicinity, and we will also discuss the future demanding situations and possibilities of this generation. This work makes use of neural networks to organize data and diverse programs to assist improve effects. In this Chatbot we are able to integrate natural language concepts with deep mastering for better consequences. Care performs a vital function in our daily existence: whilst a person is unwell, he is going to the family health practitioner or to the health center, his neighbor finds that he is going through problems. In recent years, many agencies and associations have partnered with hospitals. To offer help to docs and remedy, so we can treat patients better and reduce their workload by way of using generation. Chatbot can play a prime position in reworking the healthcare industry by supplying predictive prognosis or any other help including appointment booking.

Medical Chatbot Using Natural Language Processing

It is very vital to begin a healthy way of life. But if you have any health related hassle, then it is very difficult to fulfil the physician. The proposed idea is to develop a medical Chatbot using natural language processing strategies, part of synthetic intelligence, which diagnoses the ailment and provides a form. Healthcare Chatbot's are designed to reduce healthcare costs and enhance get right of entry to clinical know-how. Some

Chatbot's act as clinical guides that help patients examine extra about their sickness and enhance their health. A health practitioner chatbot can stumble on all sorts of diseases and provide the vital records to the consumer handiest whilst it is beneficial. The device presents text or voice help that may be used the usage of an appropriate language, primarily based at the person's records, the module will teach the physician what disorder he has, and will also provide advice on what sort of disorder he has. . The ailment is the meals to be eaten. Thus, people will recognise approximately their protection and get proper safety. Chatbots are programs that run on system learning (ML) and artificial intelligence (AI) natural language processing (NLP) technologies, such as NLTK for Python. Using speech evaluation, and sensible responses may be discovered through building a gadget that provides human-matched responses

EXISTING SYSTEM

A conversational actor that communicates with users in herbal language is referred to as a chatbot. Many Chatbot's have been created using textual content conversation, from ELIZA, which imitates a psychiatrist, to Perry, which imitates a schizophrenic patient. Eliza is a famous synthetic therapist. Bot's attempts to condense questions and answers into some key phrases. If the key-word isn't always observed, Eliza will respond with general speaking phrases to keep the communication going. The body needs the body's protein shape.

Disadvantages of Existing System

- Many AI-powered chatbots offer fashionable statistics, however may have problem presenting personalized recommendation or guidelines tailored to every individual's particular health scenario and history.
- Patient fitness statistics is sensitive and there are concerns about the privateers and security of data shared with AI chatbots. It is critical to comply with information protection guidelines inclusive of HIPAA within the US.

PROPOSED SYSTEM

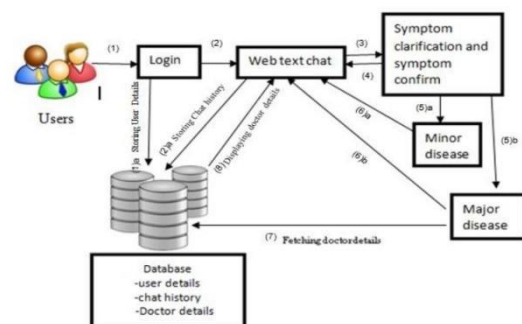
The proposed idea is to broaden a scientific chatbot the use of synthetic intelligence that could diagnose

a disorder and provide basic information about it before traveling a physician. Medical cataracts had been developed to lessen scientific expenses and improve get admission to medical information. Some chatbots act as referral books that help patients learn about the disorder and enhance their properly-being. Chat could be very beneficial to trigger the disease itself and provide the vital records. Text-to-textual content diagnostics connects sufferers with hospital treatment and affords personalized diagnostics to guide their symptoms. Therefore, you have to cope with your very own safety.

Advantages of Proposed System

- 24 hours of carrier. Because AI-powered clinical chatbots offer services via computer systems in preference to people, they could provide offerings 24 hours a day, even if humans are usually at paintings. This manner that patients can get remedy or recommendation at any time of the day or night via chatbots.
- Low price: AI-powered medical chatbots may be supplied at a lower fee than traditional healthcare offerings. This makes it simpler for low-earnings families and medically underserved regions to access health services.
- Services at scale: sensible healthcare chatbots can serve many customers on the identical time. This makes it feasible for many human beings to use it on the equal time, even in crowded towns or regions with confined medical facilities.

SYSTEM ARCHITECTURE



SYSTEM REQUIREMENTS

Hardware Requirements

- System: Pentium Dual Core.
- Hard Drive: a hundred and twenty GB.
- Monitor: 15-inch LED
- Input gadgets: keyboard, mouse.
- RAM: 4 GB

Software Requirements

- Operating system: Windows 7/10.
- Programming Language: Python.

MODULES

- User Verification and Trait Extraction
- Features are extracted with a skilled dataset
- Explanation and commands of illnesses by a health practitioner

User Verification and Trait Extraction

This is in which the person's login information is proven. The signs are then extracted the use of a string seek algorithm, wherein the substring representing the signs is identified by the herbal textual content enter. When users at once provide the code call, the system acknowledges the command. However, the laptop also has enter to the system, for example: "When I study, it's exceptional at first, however my eyes get heavy through the years and I begin to see double." In this situation, the computer have to spit out words like "worn-out eyes" and "double up" (no longer options like "study" or "well").

Features Are Extracted From a Skilled Dataset

Some information captures person enter, generating a list of recommended associated features. We ask the user to verify whether or not humans have any prescribed standards or not. Specific diseases are indexed from the response. Symptoms and recommended signs and symptoms are in addition clarified by asking users a chain of questions and signs and symptoms adapted to the best sickness.

Explanation of Diseases and Commands from the Medical Doctor

The process includes listing diseases in a database, comparing every symptom to common sickness characteristics. Next, the characteristic is checked until a suit is observed. They are listed in line with the contribution of the give up customers to the question rank. The chatbot identifies the precise sickness and communicates it to the stop person.

The chatbot checks whether or not the identified disease is a chief or minor trouble based totally at the recommendations built into the chatbot. If the problem is critical, the chatbot sends the health practitioner's info and directs the end person to an expert. And if the problem is minor, the chatbot identifies the disease, directs the end consumer approximately first aid or answers and shows seeing a physician as quickly as feasible.

GOALS:

The fundamental objectives of UML design are:

1. Provide users with a geared up-to-use, obvious visual layout language with the intention to create and proportion significant fashions.
2. Provide extra practice and special coaching to beautify key principles.
3. be impartial from specific programming languages and development approaches.
4. Provide a formal basis for know-how language formation.
5. To promote the development of market oriented merchandise.
6. Supports excessive-level development standards including collaboration, composition, modeling, and additives.
7. Complete with the best competencies.

RESULTS AND DISCUSSION

By the use of synthetic intelligence remedy chatbots, the consumer can be able to do voice communication and get particular desired outcomes within the shape of voice. The person can solution special and widespread questions saved within the database. Chatbot overall performance relies upon at the Raspberry Pi and database. The foremost reason of the fitness care chatbot machine is to offer offerings to humans in rural and authorities hospitals who're unable to e-book an appointment with a doctor or acquire medical facts. They can solve their problem the use of chatbot. The synthetic intelligence based chatbot gadget gives clinical tips on drugs or sicknesses and is to be had 24*7 hours. With the speech signal input thru the microphone, it's miles compared to the database saved at the Raspberry Pi and remarks is obtained from the database. If the description of the query or the facts associated with the disorder and remedy is not available in the database, the answer will be dispatched from the Google servers. The input speech sign is first transformed from voice

SCREENSHOTS

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up the new norm because of the speedy unfold of Covid-19. Additionally, effective medical faculty AI has been determined to be exceedingly effective in improving healthcare offerings and enhancing the affected person enjoy. On the alternative hand, those scientific colleges that are made via synthetic intelligence have been discovered to have some obvious boundaries. Efforts must be made to triumph over these limitations and to supply better health services, in a spread of ways including increasing their best of statistics collection, the use of strategies evolved thru synthetic intelligence, growing the quantity of qualified health professionals, cooperating and many others. Implement security features.

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