VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, Karnataka

INTERNSHIP REPORT

ON

"Chatbot for Healthcare System"

Submitted in partial fulfilment for the award of degree(18CSI85)

BACHELOR OF ENGINEERING IN
COMPUTER SCIENCE

Submitted by:

PRUTHVIKA S MAKARI

USN 2GO20CS031

Conducted at
COMPSOFT TECHNOLOGIES

GOVERNMENT ENGINEERING COLLEGE

Department of Computer Science

Accredited to VTU, Belagavi

Devagiri, Haveri 581110.

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CERTIFICATE

This is to certify that the Internship titled **"Chatbot for Healthcare System"** carried out by **Miss. PRUTHVIKA S MAKARI,** a bonafide student of Government Engineering College Haveri Institute of Technology, in partial fulfillment for the award of **Bachelor of Engineering**, in **COMPUTER SCIENCE** under Visvesvaraya Technological University, Belagavi, during the year 2022-2023. It is certified that all corrections/suggestions indicated have been incorporated in the report.

The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (18CSI85)

Signature of Guide **Signature of HOD** **Signature of Principal**

External Viva:

Name of the Examiner Signature with Date

1)_____

2)_____

DECLARATION

I **PRUTHVIKA S MAKARI**, final year student of Computer Science, Government Engineering College Haveri, declare that the Internship has been successfully completed, in **COMPSOFT TECHNOLOGIES**. This report is submitted in partial fulfillment of the requirements for award of Bachelor Degree in Branch name, during the academic year 2022-2023.

Date : 20/09/2023 :

Place : HAVERI

USN : 2GO20CS031

NAME : PRUTHVIKA S MAKARI

OFFER LETTER

INTERNSHIP OFFER LETTER

Date: 11th August, 2023

Name: **Pruthvika S Makari**
USN: **2GO20CS031**
Placement ID: **TIE0408ML258**

Dear Student,

We would like to congratulate you on being selected for the **Machine Learning with Python (Research Based)** Internship position with **Compsoft Technologies**, effective Start Date **11th August, 2023**. All of us are excited about this opportunity provided to you!

This internship is viewed as being an educational opportunity for you, rather than a part-time job. As such, your internship will include training/orientation and focus primarily on learning and developing new skills and gaining a deeper understanding of concepts of **Machine Learning with Python (Research Based)** through hands-on application of the knowledge you learn while you train with the senior developers. You will be bound to follow the rules and regulations of the company during your internship duration.

Again, congratulations and we look forward to working with you!.

Sincerely,

Nithin K. S
Project Manager
COMPSOFT TECHNOLOGIES
No. 363, 19th main road,
1st Block Rajajinagar
Bangalore - 560010

ACKNOWLEDGEMENT

This Internship is a result of accumulated guidance, direction and support of several important persons. We take this opportunity to express our gratitude to all who have helped us to complete the Internship.

We express our sincere thanks to our Principal, for providing us adequate facilities to undertakethis Internship.

We would like to thank our Head of Dept – CSE, for providing us an opportunity to carry out Internship and for his valuable guidance and support.

We would like to thank our (Lab assistant name) Software Services for guiding us during the period of internship.

We express our deep and profound gratitude to our guide, Guide name, Assistant/Associate Prof, for her keen interest and encouragement at every step in completing the Internship.

We would like to thank all the faculty members of our department for the support extended during the course of Internship.

We would like to thank the non-teaching members of our dept, forhelping us during the Internship.

Last but not the least, we would like to thank our parents and friends without whose constant help, the completion of Internship would have not been possible.

PRUTHVIKA S MAKARI

2GO20CS031

ABSTRACT

- The integration of artificial intelligence (AI) into healthcare systems has brought about transformative changes in patient care, making it more efficient, accessible, and personalized. This paper presents the design and implementation of an AI-driven chatbot for healthcare systems, aimed at enhancing patient engagement, improving healthcare delivery, and reducing the burden on healthcare professionals.
- The chatbot utilizes natural language processing (NLP) techniques and machine learning algorithms to engage in real-time conversations with patients, providing them with valuable health information, answering their queries, and offering personalized recommendations. It operates as a virtual assistant, capable of scheduling appointments, providing medication reminders, and offering guidance on a wide range of health-related topics.
- In summary, the AI-driven chatbot for healthcare systems represents a significant advancement in patient care by providing timely and personalized support. It streamlines healthcare processes, empowers patients to take control of their health, and assists healthcare professionals in delivering more efficient and effective care. The integration of AI in healthcare is poised to revolutionize the industry, ultimately leading to improved patient outcomes and reduced healthcare costs

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CHAPTER 1

COMPANY PROFILE

1. COMPANY PROFILE

A Brief History of Company

Company, was incorporated with a goal ”To provide high quality and optimal Technological Solutions to business requirements of our clients”. Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions. They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Company is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

we strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. At our Company we work with them clients and help them to define their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstorming session, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put it in one sentence ” Technology helps you to Delight your Customers” and that is what we want to achieve.

CHAPTER 2

ABOUT THE COMPANY

2. ABOUT THE COMPANY

We are a Technology Organization providing solutions for all web design and development, Researching and Publishing Papers to ensure the quality of most used ML Models, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Compsoft Technologies specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements. The organization where they have a right mix of professionals as a stakeholders to help us serve our clients with best of our capability and with at par industry standards. They have young, enthusiastic, passionate and creative Professionals to develop technological innovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to "Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well". Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

Services provided by Compsoft Technologies.

- Core Java and Advanced Java
- Research and Development/Improvise of ML Models
- Web services and development
- Dot Net Framework
- Python
- Selenium Testing
- Conference / Event Management Service
- Academic Project Guidance
- On The Job Training
- Software Training

CHAPTER 3

INTRODUCTION

3. INTRODUCTION

Introduction to ML

Computers give us information; they engage us and help us in a lot of manners. A chatbot is a software or computer program that simulates human conversation or "chatter" through text or voice interactions. Yet, this paper concentrates only on text. These systems can learn themselves and restore their knowledge using human assistance or using web resources. This application is incredibly fundamental since knowledge is stored in advance. The system application uses the question-and-answer protocol in the form of a chatbot to answer user queries. This system is developed to reduce the healthcare cost and time of the users, as it is not possible for the users to visit the doctors or experts when immediately needed to diagnose a disease. The response to the question will be replied based on the user query and knowledge base. The significant keywords are fetched from the sentence and answer to those sentences, if the match is discovered or the significant, answer will be given, or similar answers will be displayed. Here the users can type in the symptoms they are facing and the chatbot will fetch the dataset with correct diagnose of disease/illness. It will also provide you the doctors details such as name, prognosis, website, etc if asked. The chatbot is made using python programming language. Frontend is made using html, css and javascript.

Problem Statement

The objective of the system is to build an artificial intelligence based chatbot for healthcare using python programming language. There are numerous chatbots being used today however this particular chatbot is for making healthcare and healthcare industry more flexible, by making patients easily connect with the healthcare provider. In this chatbot we will be using a dataset containing various symptoms along with the disease related to those symptoms. Whenever the user will type in the symptoms, he/she is facing, the chatbot will fetch the dataset for those symptoms and answer the user about what type of disease it could be. We will also be using a dataset containing a list of doctors belonging to different areas of expertise, for example dermatologists, gynaecologist, orthopaedist, etc from different locations along with their details. If user wants to know the nearby doctors or have communication with a doctor curing that particular disease the chatbot will provide the user, with the details of the same. This chatbot will have a user-friendly interface. This chatbot will be very useful for patients wanting an immediate response to a particular symptom as it will be working 24x7.

CHAPTER 4

SYSTEM ANALYSIS

4. SYSTEM ANALYSIS

1. Existing System

Subsequent to experiencing a portion of the project with respect to usage utilizing the chatbot for medical and healthcare purposes, it was found that this idea is searched a lot and is a mainstream idea which is still in advance. The advances utilized were not just productive and solid yet in addition financially achievable. Not only this, here other very useful parameters of using chatbot in healthcare were observed too

2. Proposed System

The objective of the system is to build an artificial intelligence based chatbot for healthcare using python programming language. There are numerous chatbots being used today however this particular chatbot is for making healthcare and healthcare industry more flexible, by making patients easily connect with the healthcare provider. In this chatbot we will be using a dataset containing various symptoms along with the disease related to those symptoms. Whenever the user will type in the symptoms, he/she is facing, the chatbot will fetch the dataset for those symptoms and answer the user about what type of disease it could be. We will also be using a dataset containing a list of doctors belonging to different areas of expertise, for example dermatologists, gynaecologist, orthopaedist, etc from different locations along with their details. If user wants to know the nearby doctors or have communication with a doctor curing that particular disease the chatbot will provide the user, with the details of the same. This chatbot will have a user-friendly interface. This chatbot will be very useful for patients wanting an immediate response to a particular symptom as it will be working 24x7.

3.Objective of the System

Their objective behind the use of chatbot was to provide medical assistance to patients with some common diseases such as colds, flu, typhoid, malaria, jaundice, etc. without the need of physically visiting the health centers. Their innovative idea to use chatbot © 2022 JETIR April 2022, Volume 9, Issue 4 www.jetir.org (ISSN-2349-5162) JETIR2204602 Journal of Emerging Technologies and Innovative Research (JETIR) www.jetir.org g7 in a medical field indeed otherwise a great thought with the constant rising population of the nation. A few years ago, there are many models of medical dialogue that have been around an invention that was too expensive for the average person, but they have tried to overcome this back in their healthcare chatbot program.

CHAPTER 5

REQUIREMENT ANALYSIS

5. REQUIREMENT ANALYSIS

Hardware Requirement Specification

1. Processor (CPU):

A multi-core processor is recommended, such as an Intel Core i5 or i7, or an equivalent AMD processor.

2. Memory (RAM):

- At least 8GB of RAM is recommended for development and testing purposes. If you plan to train large models, more RAM (16GB or higher) would be beneficial.

3. Storage:

A minimum of 20GB of free disk space for the operating system and software installations.

4. GPU (optional):

While not strictly necessary, having a dedicated GPU (Graphics Processing Unit) can significantly speed up the training process, especially for larger models.

5. Operating System:

Rasa is compatible with Windows, macOS, and Linux. Choose an operating system that you are comfortable working with.

Software Requirement Specification

1. Python:

Rasa is primarily written in Python, so you'll need to have Python installed on your system. You can download Python from the official website: [python.org](https://www.python.org/downloads/).

2. Rasa:

Install Rasa using Python's package manager, pip, by running the following command

3. Virtual Environment:

It's recommended to set up a virtual environment to manage your project dependencies. This helps keep your project's dependencies isolated from other projects.

4. Development Environment:

Choose a code editor or integrated development environment (IDE) for coding. Common choices include Visual Studio Code, PyCharm, Jupyter Notebook, etc.

5. Web Server (if applicable):

For deploying the chatbot in a production environment, you may need a web server like Apache or Nginx.

CHAPTER 6

DESIGN ANALYSIS

6. DESIGN & ANALYSIS

Designing and analyzing a Chatbot for Healthcare System Using AI with the Rasa framework requires careful planning and consideration of various aspects. Here's a high-level overview of the design and analysis process:

Design Phase:

1. Define Project Scope:

Clearly define the scope of the chatbot project, including the specific healthcare services it will provide and the target audience (e.g., patients, healthcare professionals).

2. User-Centered Design:

Conduct user research to understand the needs, preferences, and pain points of potential users (e.g., patients, doctors, nurses).

- Create user personas and user journeys to guide the design process.

3. Feature Specification:

Define the chatbot's features and capabilities, such as appointment scheduling, medical information retrieval, medication reminders, and telemedicine integration.

4. Data Requirements:

Identify the data sources required for the chatbot, including patient records, medical databases, and external APIs for medical information.

5. User Interface Design:

Design user-friendly interfaces for both web and mobile platforms, ensuring accessibility and ease of use.

Create wireframes and prototypes for user testing.

6. Natural Language Processing (NLP):

- Choose NLP libraries and techniques to understand and process natural language inputs from users.
- Develop intent recognition, entity extraction, and dialogue management components.

7. AI Model Selection:

Select appropriate machine learning models and algorithms for specific tasks (e.g., text classification, sentiment analysis).

Fine-tune or train models using relevant healthcare data.

8. Integration:

Plan and implement integrations with Electronic Health Record (EHR) systems, telemedicine platforms, and medical databases. - Ensure data security and compliance with healthcare

9. Regulatory Compliance Assessment:

Review the chatbot's compliance with healthcare regulations (e.g., HIPAA) and data privacy laws.

Ensure that all necessary documentation and processes are in place for audits and regulatory reporting.

10. Cost-Benefit Analysis:

Evaluate the cost-effectiveness of the chatbot implementation by comparing the benefits (e.g., improved patient care, reduced administrative workload) to the costs (development, maintenance, and operational costs).

11. User Satisfaction Analysis:

Measure user satisfaction through surveys, feedback forms, or user ratings.

Use user satisfaction data to guide further improvements.

12. Documentation and Reporting:

Maintain comprehensive documentation of the chatbot's design, features, testing results, and compliance efforts.

Generate reports for stakeholders, including performance reports, security assessments, and regulatory compliance reports.

By following a structured design and analysis process, you can ensure that the Chatbot for Healthcare System Using AI with the Rasa framework meets its objectives, provides value to users, and operates securely and efficiently within the healthcare ecosystem. Regular monitoring and continuous improvement are essential to adapt to evolving healthcare needs and technology advancements.

CHAPTER 7

IMPLEMENTATION

7. IMPLEMENTATION

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

TESTING

The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:

1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether theobjectives have been met. Errors are noted down and corrected immediately.
2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is dividedinto several modules and is developed individually. So unit testing is conducted to individual modules.
3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.

CHAPTER 8

SNAPSHOTS

8. SNAPSHOTS

FIG:8.1

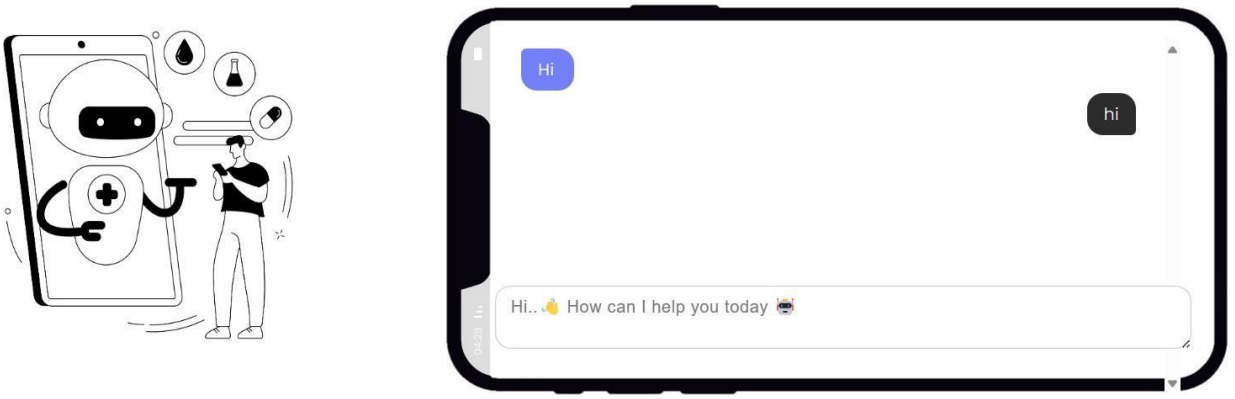

FIG:8.2

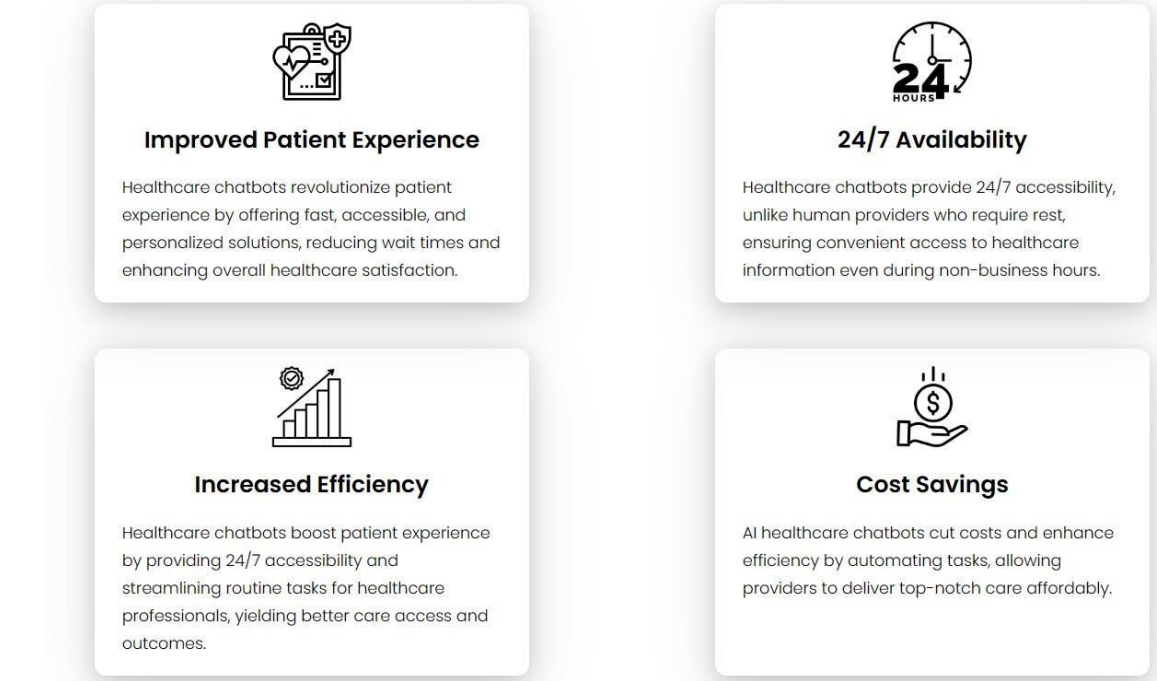
Improved Patient Experience
Healthcare chatbots revolutionize patient experience by offering fast, accessible, and personalized solutions, reducing wait times and enhancing overall healthcare satisfaction.
24
HOURS
24/7 Availability
Healthcare chatbots provide 24/7 accessibility, unlike human providers who require rest, ensuring convenient access to healthcare information even during non-business hours.
Increased Efficiency
Healthcare chatbots boost patient experience by providing 24/7 accessibility and streamlining routine tasks for healthcare professionals, yielding better care access and outcomes.
Cost Savings
AI healthcare chatbots cut costs and enhance efficiency by automating tasks, allowing providers to deliver top-notch care affordably.

FIG:8.3

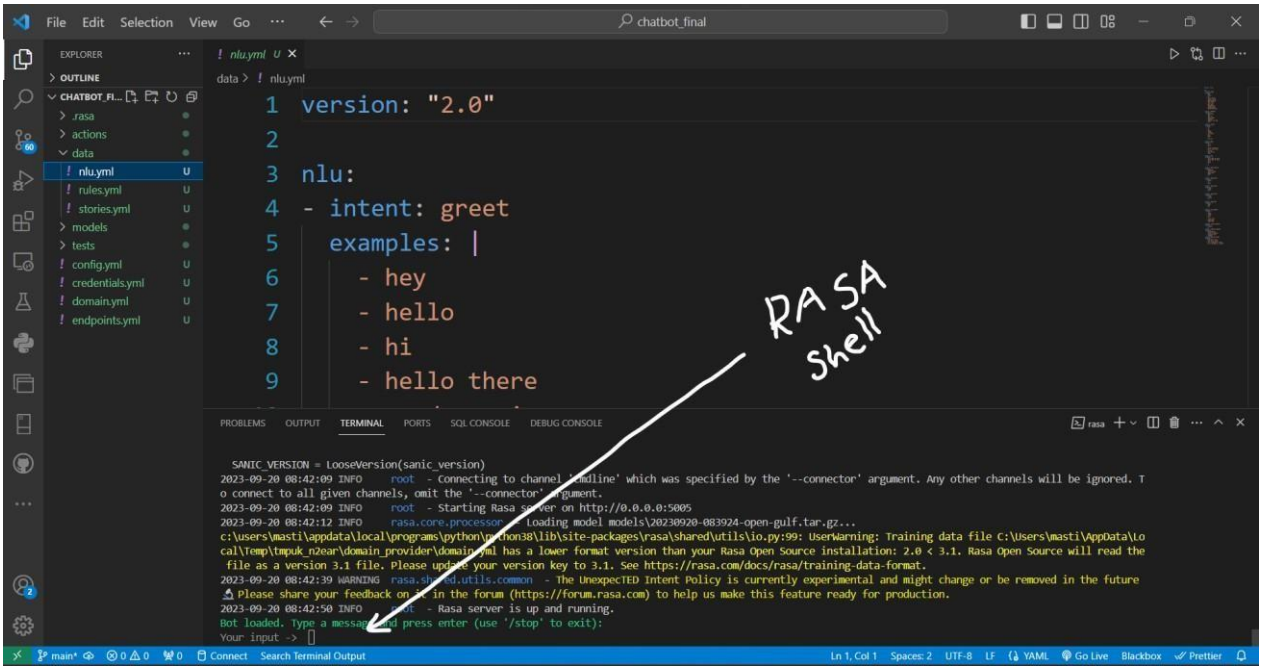
File Edit Selection View Go
chatbot_final
EXPLORER
nlu.yml
data > nlu.yml
1 version: "2.0"
2
3 nlu:
4 - intent: greet
5 examples: |
6 - hey
7 - hello
8 - hi
9 - hello there
RASA shell
PROBLEMS OUTPUT TERMINAL PORTS SQL CONSOLE DEBUG CONSOLE
SANIC_VERSION = LooseVersion(sanic_version)
2023-09-20 08:42:09 INFO root - Connecting to channel 'cmdline' which was specified by the '--connector' argument. Any other channels will be ignored. To connect to all given channels, omit the '--connector' argument.
2023-09-20 08:42:09 INFO root - Starting Rasa server on http://0.0.0.0:5005
2023-09-20 08:42:12 INFO rasa.core.processor - Loading model models\20230920-083924-open-gulf.tar.gz...
c:\users\masti\appdata\local\programs\python\python38\lib\site-packages\rasa\shared\utils\io.py:99: UserWarning: Training data file C:\Users\masti\AppData\Local\Temp\tmpuk_n2ear\domain_provider\domain.yml has a lower format version than your Rasa Open Source installation: 2.0 < 3.1. Rasa Open Source will read the file as a version 3.1 file. Please update your version key to 3.1. See https://rasa.com/docs/rasa/training-data-format.
2023-09-20 08:42:39 WARNING rasa.shared.utils.common - The UnexpecTED Intent Policy is currently experimental and might change or be removed in the future
Please share your feedback on it in the forum (https://forum.rasa.com) to help us make this feature ready for production.
2023-09-20 08:42:50 INFO root - Rasa server is up and running.
Bot loaded. Type a message and press enter (use '/stop' to exit):
Your input ->
Connect Search Terminal Output
Ln 1, Col 1 Spaces: 2 UTF-8 LF YAML Go Live Blackbox Prettier

FIG:8.4

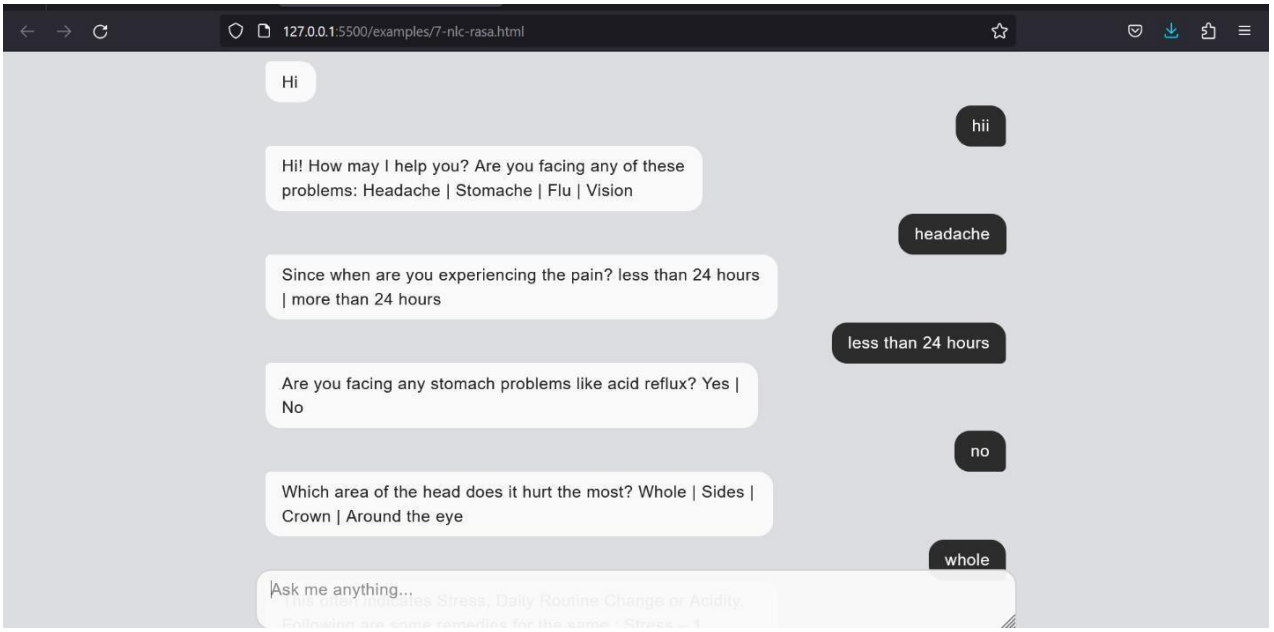

FIG:8.5 Frontend for the chatbot

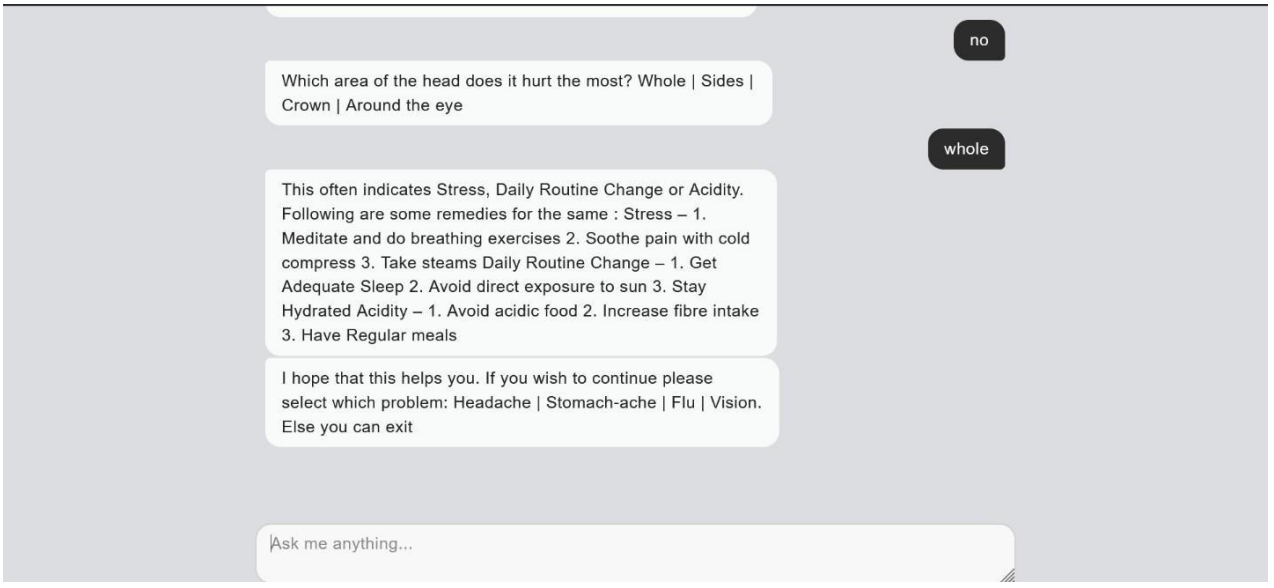

FIG:8.6 Analyze the problem and provide the solution

CHAPTER 9

CONCLUTION

9. CONCLUSION

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project:

- Automation of the entire system improves the efficiency
- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- It effectively overcomes the delay in communications.
- Updating of information becomes so easier
- System security, data security and reliability are the striking features.
- The System has adequate scope for modification in future if it is necessary.

10. REFERENCE

1. Chatbot for Healthcare System Using Artificial Intelligence, Conference: 2020 8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)

[2] Survey on Medical Self-Diagnosis Chatbot for Accurate Analysis Using Artificial Intelligence, International Journal of Trend in Research and Development, Volume 5(2), ISSN: 2394-9333 www.ijtrd.com

[3] Healthcare Chatbot System using Artificial Intelligence, International Journal of Trend in Research and Development, Volume 8(1), ISSN: 2349-6002 www.ijtrd.com