

##### **NIT6150**

##### **Advanced Project**

##### Project Proposal

**Healthcare Chatbot System**

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# Introduction

The way people interact with one other has been completely transformed by internet-connected devices. As a result of technological advancements, "people are demanding more intelligent self-service options and experiences answers within seconds, not minutes." Machine learning (ML) and artificial intelligence (AI) are being adopted by several sectors to improve customer service. Chatbots are employed in various fields these days, including e-commerce to answer product-related queries from customers and banking systems for customer support. A chatbot is a computer software that receives human input in natural language and responds to it with a perceptive and pertinent response before sending it back to the user. Hospitals are now permitting patients to engage with technology, such chatbots, to learn more about disease, doctor or hospital speciality. This technology will assist in offering the user support around-the-clock. A chatbot system is a piece of software that can instantly answer questions from users. They may answer to user inquiries like "I have a headache and chest pain at the same time" and address them appropriately.

# Background and Client Profile

The need to manage growing expenses and expanding demand while improving patient care is driving a major transition in the healthcare sector. Healthcare providers are under pressure to offer services in a more effective and efficient manner as the population ages and expands. There are several significant issues facing the sector:

**Patient Overload**: Long wait times and lower patient satisfaction are results of the difficulty many healthcare institutions have in handling many patients. The demand for both ordinary questions and more complicated medical consultations often leaves healthcare workers overworked and underprepared.

**Administrative Inefficiencies**: Appointment scheduling, routine question responding, and patient record management take up a significant amount of the time of healthcare personnel. Although necessary, the time spent on these duties takes away from directly caring for patients.

**Accessibility and Patient Engagement**: Patients, particularly those who live in distant places or have restricted mobility, require healthcare to be more accessible. Improving health outcomes also depends on including people in their own treatment, yet many patients find it difficult to obtain trustworthy medical information or to properly manage their care.

With the ability to automate repetitive processes, provide quick patient support, and improve communication between patients and doctors, chatbots have become more and more relevant in the healthcare industry because to advancements in AI and NLP. A healthcare chatbot system has been created in response to industry issues. It offers individualized health insights, ease of use, and 24/7 support—all of which enhance patient care and operational effectiveness.

Since this system will be created as a part of the academic project, we may consider VU Sydney as our client. But if we have to consider the client in real world, we can take example of the healthcare institutions, chemist, etc.

# Purpose and Objectives

The primary goal of the proposed system is to offer a quick and practical method for handling health queries. The healthcare chatbot system will aid with personal health care and ease user inquiries.

The objectives of the system are as follows:

* To provide response on health queries
* To diagnose disease based on symptoms provided
* To provide way to maintain patient health record

# Scope and Exclusion

The proposed healthcare chatbot system could offer significant advantages, such as eliminating long wait times for customer service by providing 24/7 virtual support. This system would be particularly beneficial for managing chronic conditions like diabetes, cancer, as well as supporting self-care, elderly care, and more.

However, there are potential limitations, such as the chatbot's possible inability to recognize all diseases due to limited data. The system might also lack features like medication reminders and appointment notifications. Additionally, there are concerns about the AI's reliability and privacy, as it could potentially misdiagnose conditions or expose personal health data to risks like hacking.

# Assumptions and Constraints

There are several restrictions and presumptions that apply to this system. It is anticipated that enough medical data would be accessible to properly train the chatbot, enabling it to offer precise diagnosis and health-related information. Additionally, the project assumes that users will have access to computers or cell phones and that the chatbot would abide by healthcare rules to protect the privacy and security of user data. It further assumes that users, including patients and healthcare practitioners, would be receptive to embracing this technology and that the AI and NLP technologies employed will be sufficiently sophisticated to comprehend and react to user questions.

The project is limited, though, and the chatbot's capacity to identify uncommon circumstances may be impacted by things like possible data availability issues. The accuracy and comprehension of complicated questions by the system may be affected by technical constraints in AI and NLP. The efficacy of the chatbot in a variety of demographics may also be impacted by issues with language and cultural barriers. The project must also take legal and ethical issues into account, such as the possibility of misdiagnosis and making sure the chatbot enhances rather than replaces crucial human-machine interactions in the healthcare industry.

# Deliverables

Here are the deliverables for proposed system which are explained below:

**Functional Chatbot System**: A fully functional healthcare chatbot that can converse with users around-the-clock, offer prompt support, and provide individualised health insights depending on user input.

**Technical Documentation**: Detailed documentation covering the overall system architecture, design and implementation guidelines.

**Testing and Quality Assurance Report**: A full phase report on the testing phases of the chatbot system, which ensure the functional requirements and quality standards.

# Schedule

# Budget

# Resources Roles and Responsibility

As we are two members in group, we both will be equally responsible for every phase of this project from beginning to the end. Also, we have breakdown each topic and explained below.

|  |  |  |
| --- | --- | --- |
| **Resources** | Human Resources | We'll be working simultaneously and, if necessary, asking our supervisor for assistance. |
| Technical Resources | **Software**: Django Programming language with NLP  **Hardware**: Own laptops |
| Financial Resources | We will be using the tools, software, and supplies that are available to complete this project. |
| **Roles and Responsibility** | Development | Both group members |
| Design | Both group members |
| Testing | Both group members |
| Documentation | Both group members |

# Meeting Schedule

We have fixed the meeting schedule for this project which is shown as below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.N.** | **Discussion** | **Location** | **Date** | **Time** | **Discussions** |
| 1 | Weekly Status Meeting | Classroom | Every Monday | 6am-7am | Review things from previous week and set deadlines for this week. |
| 2 | Designing Review Meeting | Classroom | Every Wednesday | 6pm-7pm | Discuss design related issues and update them as needed |
| 3 | Development Updates | Outdoor campus area | Every Friday | 1pm-2pm | Review progress of code and synchronize tasks |
| 4 | Overall Progress Meeting | Online Meeting using Zoom | Every Saturday | 6pm-6:30pm | Review and prepare for final documentation |

# Version Control

About the version controlling system for both report and source code we will be using the tool **Git** to track the changes to the project code and **GitHub** for collaboration through remote. We will commit the changes through our own branch and merge the changes to main branch after reviewing. If merge conflict occurs when merging the source code, we will discuss and resolve it by ensuring the correct and functional change.

# References

At least 6