# AI Virtual Health Assistant

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## Abstract

In this report,I have proposed an idea of using An AI-powered virtual assistant offers personalized experiences to patients which helps them to identify their illness based on the symptoms, monitor their health status, schedule doctor appointments, and do more.

Misdiagnosis or delayed diagnosis of a medical condition, illness, or injury can lead to much worse problems. With artificial intelligence in place, situations like these can be easily avoided.

AI is transforming modern healthcare technology in so many profound ways.

## 1. Problem statement

The problem statement is to use the virtual health assistant tool for identify the illness or health based on symptoms,monitor the health status,schedule appointments etc.

One of the most common problems faced by todays people is a lack of knowledge of diseases and a lack of immediate first aid consultation.Due to this many people may suffer from physical and mental stress as they try to figure out the reason for their condition.In some cases,they even lost their lives and common diseases become life threatening.I hope to create a service that can provide best assistance related on health.

## 2. Business need assessment

Instead of searching for causes of the symptoms that you are suffering from, you can ask the virtual nursing assistant to guide you through. The healthcare assistant will

not only provide medical advice when you have common ailments or complaints but also allow you to schedule an appointment with a doctor or a specialist. Moreover, the virtual assistant would be available 24/7, which means it can answer your questions and provide answers in real-time. This application of AI can be adopted to increase patient engagement and improve their self-management skills to prevent chronic situations from getting worse.

## 3. Target specification

The proposed system tries to eliminate users need to figure out their disease by giving them access to a centralized clinical repository in a much interactive manner.Users can also ask questions regarding their disease and even book online and offline appointments with doctors.

This webservice stores the health record of the user on a remote server.User can enter the symptoms or disease and our system try to figure out it and give the immediate action that user can take it maybe some home remedies or some emergency medicine.In the end, a precise prescription is generated.What this webservice cant ensure is the accuracy of the health condition that the service arrived at, and thus in such cases,a physician must be contacted.Taking that case into condition there is one more feature that is an online video appointment  in case of emergency and users can also book an offline appointment near their location.

## 4. External search

- **how-ai-powered-virtual-assisants-can-transform-healthcare**
- **artificial-intelligence-ai-in-healthcare-transforming-virtual-care**
- **top-10-companies-in-healthcare-virtual-assistants-market**

## 5. Benchmarking

AI Virtual Assistants like Amazon Alexa, Microsoft Cortana and Google Home are steadily making their way into healthcare. Powered with the advanced algorithm of machine learning and natural language processing, they **help in transforming day-to-day operations for doctors, other staff and patients, and ensure compliance**.But this assistant also be beneficial to small healthcare institutes to reach their health services for public.

## 6. Applicable Patents

**U.S. Patno.9536049B2**

A conversation user interface enables patients to better understand their healthcare by integrating diagnosis, treatment, medication management, and payment, through

a system that uses a virtual assistant to engage in conversation with the patient. The conversation user interface conveys a visual representation of a conversation between the virtual assistant and the patient. An identity of the patient, including preferences and medical records, is maintained throughout all interactions so that each aspect of this integrated system has access to the same information. The conversation user interface presents allows the patient to interact with the virtual assistant using natural language commands to receive information and complete task related to his or her healthcare.

## 7. Applicable Regulations

**1. Information Technology Act, 2000** ("**IT Act**"): The IT Act was enforced to provide legal recognition to transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as "electronic commerce", which involve the use of alternatives to paper-based methods of communication and storage of information.

**2. E-Contracts:**

In light of the above, we understand that the patients' need to be informed about the collection of his/her data, the usage as well as the measures taken by the body corporate to maintain its confidentiality and obtaining consent before collection and disclosure of the same. The basic question that arises is how to obtain the patients' consent?

**3. The New Telecom Policy, 1999:**

All service providers who render "Application Services" – which includes telemedicine services – using telecom resources provided by telecom service providers, are required to be registered as an 'Other Service Provider' ("OSP") with the Department of Telecommunications**[15]**.

**4. The Drugs and Cosmetics Act, 1940 ("D&C Act") and Drugs and Cosmetics Rules, 1945 ("D&C Rules"):**

In order to regulate the manufacture, sale, import and distribution of drugs in India, D&C Act and D&C Rules have come into force. The D&C Act requires that all drugs must be sold under a license. The D&C Rules clearly lay down which drugs can be sold only on the production of a prescription issued by a registered doctor, which implies that there is a distinction between prescription and non-prescription drugs.

**5. Intellectual Property Rights:**

E-Healthcare facilities/platforms give way to innovations, developments, trademarks and content generation and the protection of the same is a high priority in today's market.

**6. The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 and Drugs and Magic Remedies (Objectionable Advertisements) Rules, 1955 ("DMRA"):**

DMRA is enforced in India with the main objective to regulate the advertisement of the drugs. The provisions of the DMRA makes it punishable, with both fine and imprisonment, if there is a false or misleading advertisement of a medicine or drug.

**7. Telemedicine Guidelines March 25, 2020:**

The Ministry of Health and Family Welfare ("**MoHFW**") on March 25, 2020, has issued the Telemedicine Practice Guidelines ("**Guidelines**") for enabling Registered Medical Practitioners ("**RMPs**") to provide healthcare using telemedicine. 'Telemedicine' is the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities**[18]**.

**8. Indian Medical Council (Professional conduct, Etiquette and Ethics) Regulations, 2002 ("IMCR"):**

The Indian Medical Council Act, 1956 provides that only those persons who have a recognized degree in medicine and are registered with one of state medical councils have the right to practice medicine in India.

**9. The Clinical Establishments (Registration and Regulation) Act, 2010 ("ECA"):**

Establishments falling under the definition of a 'clinical establishment' under the Clinical Establishments Act would be required to register with the relevant authority and conform to the minimum standards as prescribed under the act.

**10. THE CONSUMER PROTECTION ACT, 1986 (“CPA”):**

A Consumer means a person who- (i) buys any goods for consideration which has been paid or promised or partly promised or partly paid or under any system of deferred payment and includes any user of such goods for consideration paid or promised or partly paid or partly promised or under any system of deferred payment when such use is made with the approval of such person, but does not include any person who obtain such goods for resale or for any commercial purpose

## 8. Applicable Constraints

- Protecting medical data
- Technical training and equipment
- Reduced care continuity
- Fewer In-Person consultations
- Tricky Policies and reimbursement rules

## 9. Business Oppurtunity

In the healthcare industry, healthcare virtual assistants are mainly used to improve clinical workflows and help healthcare professionals to manage low-value administrative tasks, such as accessing patients’ records, delivering therapy guidelines and information to patients, improve patient discharge and follow up the treatment process, and providing non-clinical guidance in an effective manner. It helps healthcare professionals to focus on core tasks of care delivery and thereby improve the overall productivity of healthcare systems.

## 10. Final AI Prototype

1. Proper and precise medication:This webservice holds the health records of patients on a remote server and is verified by authenticated doctors.In this personal allergies are taken into account when recommending prescriptions to the user/patients.
2. COVID19:There is a special section for covid19 from where user can book vaccine slots nearby their area.It also provides home treatment

for mild covid symptoms.Ther is also a covid resources section from where you can get oxygen cylinders and emergency medicines.

3. Online and Offline Appointment:Online appointments in which user can book avideo call with doctors.They can also book an offline appointment with doctors nearby their location.
4. Online Medicine Delivery:There is a feature of online medicine delivery in collaboration with few pharmacies,users can order the prescribed medicines right at their doorstep.
5. 24*7 Supprt:Provides 24*7 support to users.They can use it anytime anywhere.

**Tools and Technology used:**

- HTML
- CSS
- JavaScript
- jQuery
- MySQL
- PHP
- API
- Machine Learning
- WordPress
- Photoshop
- Git/Github

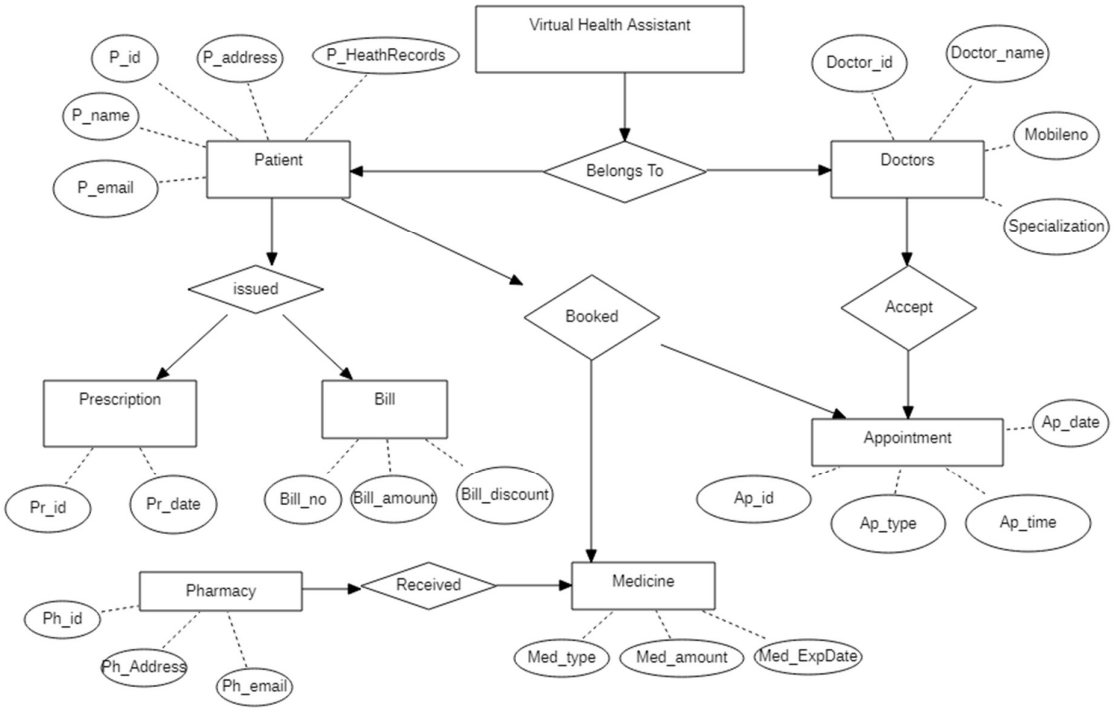
Required Skillset to build the project:

- Deep knowledge of full stack web development
- Basic knowledge of machine learning
- Intermediate knowledge of photo/video editing
- Knowledge of Git/Github

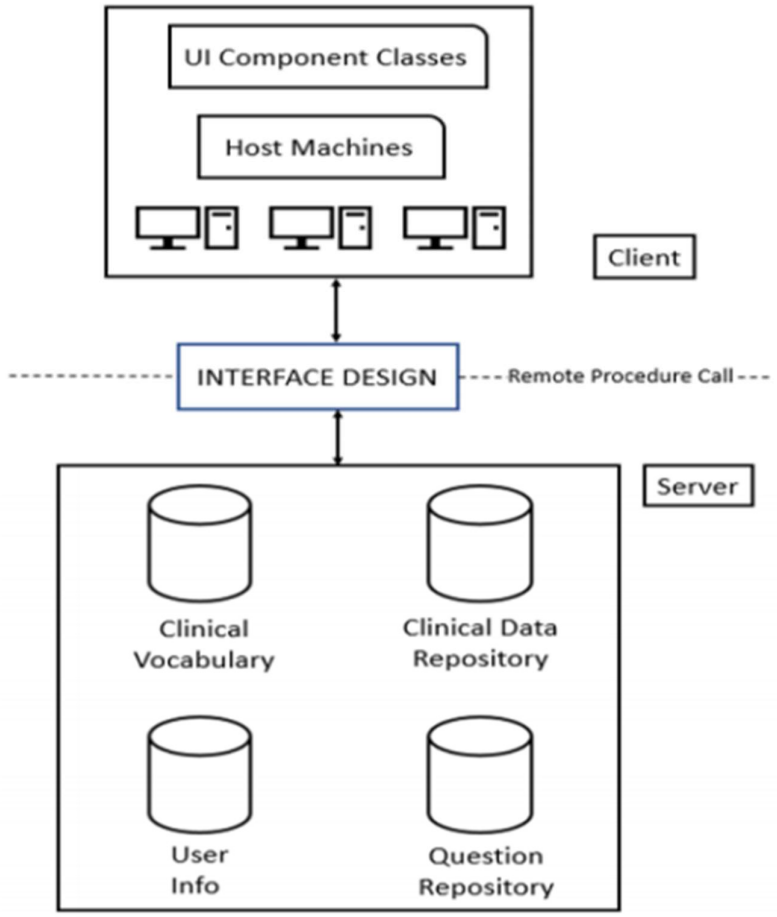
- Proper knowledge of web architecture

## UML Diagrams

## Entity Relationship diagrams



**System Architecture**




## 11.Conclusion

In summary, with the growing demand for telehealth services, VAs could extend the workforce of medical care providers by using AI-powered interfaces to ensure the safety of patients and medical staff. Conversational agents have the potential to become a regular component of health care systems, thereby multiplying medical capacities during the current COVID-19 pandemic and reducing the spread of COVID-19. Moreover, clinical-grade voice AI chatbots can sustainably supplement routine clinical work in the postpandemic period. Voice technology implements synergistic and practical solutions, which have the potential to optimize health care systems and increase preparedness for future COVID-19–like pandemics.

Reference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