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# Transforming Healthcare System through AI Sustainability: Chatbots and Emergency Assistance

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***Abstract:*** ***The healthcare sector is facing numerous challenges, including the spread of misinformation on the internet, a shortage of healthcare assistance, inadequate patient management, emergency care, and disease detection. The process of appointments can also be time-consuming and inconvenient for patients who may not be able to visit a hospital or doctor for all minor issues and doubts. The paper suggests using AI chatbots and portals to improve patient access and information, an Emergency Fatality Assistance and SOS system for immediate care, a Report & Medicine Tracking system for better patient outcomes, and AI technology in disease detection for early diagnosis and treatment. This proposed system aims to contribute to the existing literature on the integration of AI sustainability in healthcare services to address these challenges and improve patient outcomes.***

***Keywords: AI, Healthcare, Chatbot, Remedies, Diagnosis, Ehealth, Emergency help, SOS, Virtual Assistance.***

## I. INTRODUCTION

The use of Artificial Intelligence (AI) in the healthcare sector is rapidly expanding, and it is expected to revolutionize the future of healthcare services. By facilitating accurate diagnosis, effective patient care, and improved patient outcomes, AI technologies have the potential to revolutionize healthcare systems. This study intends to investigate the potential of AI in the healthcare industry and propose a system showing how it may be applied to sustainably enhance healthcare services.

One of the primary concerns in the healthcare sector is the spread of fake/baseless information about medicines and remedies on the internet. Inaccurate information like this can have negative effects on patients, so the system suggests using AI chatbots that can offer 24/7 engagement and precise information on healthcare and medications.

Furthermore, the article discusses the use of artificial intelligence portals to bring doctors and patients closer together and improve patient health management. These portals can provide report and medication tracking, appointment scheduling and remote consultations, making healthcare services more accessible and convenient for patients. It also suggests an emergency mechanism that can save lives in emergency circumstances. An SOS system that may swiftly alert emergency centres to provide immediate aid can be incorporated with the system. Ultimately, applying AI to healthcare has the potential to change the industry and make it more sustainable and open to all. This article's goal is to examine the advantages and disadvantages of artificial intelligence in the healthcare industry and to offer suggestions for long-term, sustainable improvement.

## II. LITERATURE REVIEW

| TITLE | AUTHOR | YEAR | FINDINGS |
|---|---|---|---|
| Automated Medical Chatbot [15] | Krishnendu Rarhi, Abhishek Mishra and Krishnasis Mandal | 2016 | This paper presents the design of a medical Chatbot that utilizes AIML to diagnose and provide remedies based on user-provided symptoms. The system detects message patterns and calculates the threshold value for each diagnosis, offering remedies and indicating the risk rate. This Chatbot serves as a convenient tool for individuals with busy schedules, eliminating the need to consult a doctor for minor health queries. It also proves highly useful for elderly and physically disabled individuals, providing them with easy access to solutions for their health-related concerns. |

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|---|---|---|---|
| AI Chatbot Design during an Epidemic like the Novel Coronavirus [2] | Gopi Battineni , Nalini Chintalapudi and Francesco Amenta | 2020 | The proposed system serves the purpose of assessing the severity of diseases or infections by utilizing AI technology. It employs an advanced AI chatbot integrated with AIML, which can connect users with healthcare professionals if the symptoms surpass a certain severity threshold. This approach ensures continuous monitoring of user health, aids in preventing further spread of the condition, and facilitates prompt action when necessary. |
| Artificial intelligence in disease diagnosis: a systematic literature review, synthesizing framework and future research agenda [4] | Yogesh Kumar, Apeksha Koul, Ruchi Singla, and Muhammad Fazal Ijaz | 2022 | This article provides a comprehensive survey on the application of artificial intelligence techniques in diagnosing various diseases in the healthcare field. It explores the use of machine learning and deep learning in disease diagnosis, drug discovery, and patient risk identification. The study examines the process of feature extraction and classification for predictions using medical imaging datasets. |
| Detection of Diseases Using Machine Learning Image Recognition Technology in Artificial Intelligence [14] | Jian Huang, Jing Li, Zheming Li, Zhu Zhu, Chen Shen, Guoqiang Qi, and Gang Yu | 2022 | This article focuses on the utilization of machine learning-based image processing technology for detecting childhood diseases. It explores the application of image processing technology in disease detection and provides a detailed introduction to machine learning, image recognition, and related algorithms. The article also presents experimental findings on machine learning-based image recognition technology. |

## III. PROBLEMS AND CHALLENGES

### *A. Misinformation on the Internet*

Patients frequently turn to the internet to seek information about health-related matters. However, it's important to note that not all the information available online can be trusted as accurate and reliable. This can result in the spread of misinformation, causing patients to make incorrect decisions regarding their healthcare. To address this issue, AI-powered chatbots can play a crucial role. These chatbots have the capability to offer patients reliable and precise information about various health-related issues. They can assist patients in understanding their symptoms and provide them with accurate information regarding medication, diagnosis, and treatment options.

### *B. Lack of Healthcare Assistance for Minor Issues and Remote Areas*

Visiting doctors for minor issues and seeking guidance can be a hassle for both patients and healthcare professionals. For instance, sharing medical reports or tracking progress may require frequent appointments and travel, causing inconvenience. AI can provide remote healthcare assistance for minor issues, allowing patients to receive guidance without the need for frequent visits and appointments. Along with this there is a growing shortage of healthcare professionals, particularly in rural areas, where the number of healthcare facilities is limited. AI-powered systems can also provide remote patient monitoring and telemedicine services, enabling healthcare professionals to reach patients in remote or underserved areas.

### *C. Patient Management*

Patients sometimes struggle with remembering to take their medications, keeping track of appointments, or accurately reporting their symptoms. Unfortunately, such behaviors can have negative consequences on patient outcomes. However, AI-powered systems offer a solution to enhance patient management. These systems can provide personalized treatment plans for patients and send reminders to ensure timely medication intake. Additionally, they can monitor patient behavior and alert healthcare professionals of potential health risks, enabling early intervention to prevent conditions from deteriorating.

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*D. Emergency Care*

The current emergency care infrastructure faces challenges in delivering prompt and timely care, resulting in delayed diagnoses and higher mortality rates. Patients often encounter difficulties in receiving appropriate care due to factors such as a shortage of medical expertise, inadequate infrastructure, or long waiting times. However, AI-powered emergency response systems offer a potential solution by providing access to emergency care resources. These systems ensure that patients receive timely and suitable care when faced with emergencies, addressing the shortcomings of the existing infrastructure.

## IV. SURVEY AND RESULTS

A survey was undertaken to assess public perception and comprehension of the AI-powered healthcare system. The survey was conducted among people between the age group of 18-65 years.

The survey sought to gauge respondents' views on the usefulness of AI-integrated health systems in benefiting human society.

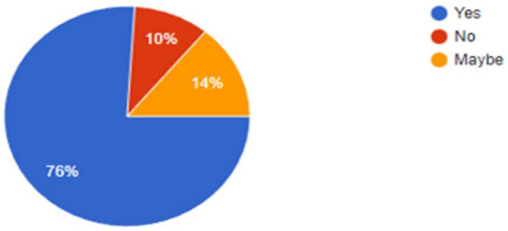



Figure A: AI-integrated health systems benefits

According to the survey, over 76% of individuals believe that AI-powered system serves as an excellent resource for delivering efficient healthcare services to humans.

The survey also aimed to determine whether respondents had prior experience using a healthcare AI system and if they have used any.

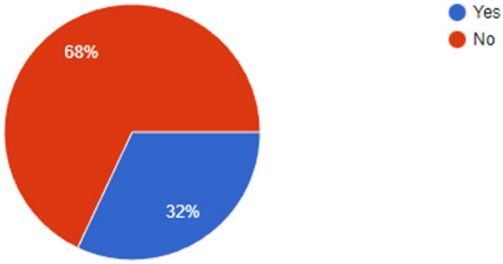



Figure B: AI Healthcare system usage chart

This finding suggests that there is still a significant portion of the population who have yet to experience the potential benefits and advantages of healthcare AI systems, highlighting the need for further awareness and adoption to maximize their impact on healthcare delivery.

The survey aimed to explore whether individuals have experienced confusion or uncertainty regarding their symptoms and the underlying causes.

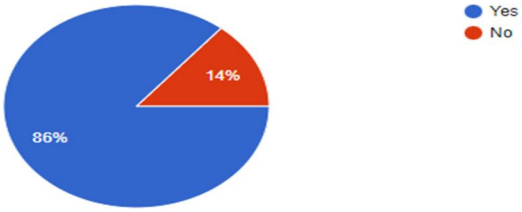



Figure C: Symptom uncertainty chart

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The survey revealed that 86% of respondents experienced confusion or uncertainty regarding their symptoms. This highlights the need for reliable healthcare information and solutions to help individuals better understand and manage their health.
It was also used to determine if participants have ever encountered misinformation or been misled by the internet regarding health symptoms, remedies, or medicines.

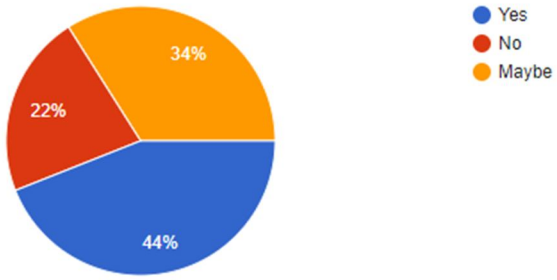



Figure D: Healthcare misinformation experience chart

The results indicate that a significant proportion of respondents, 44%, have experienced being misled by the internet regarding health symptoms, remedies, or medicines. And about 34% in confusion by the misleading. These findings emphasize the importance of factual information on healthcare out in this world.
The survey also gauged the preference of individuals regarding maintaining an online relationship with their doctor/professional for report management, scheduling, and monitoring, as an alternative to frequent in-person visits.

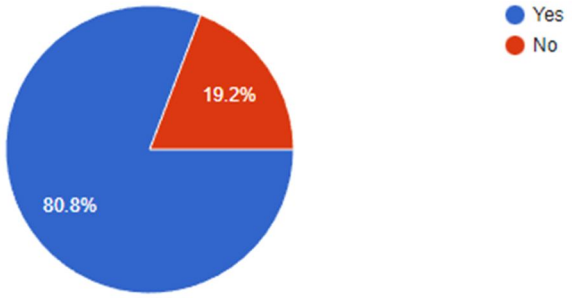



Figure E: Digital healthcare demand chart

Most respondents expressed a preference for maintaining an online relationship with their healthcare professional for report management, scheduling, and monitoring, as opposed to frequent in-person visits. This reflects the increasing demand for remote healthcare solutions that offer convenience and flexibility. Online platforms can streamline communication and enhance access to medical records, improving the overall patient experience.
The survey sought to determine the perceived usefulness of having access to medical advice during emergencies, prior to the arrival of professional help, as expressed by the participants.

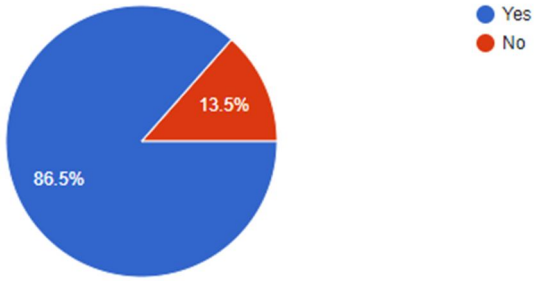



Figure F: Need for emergency assistance system chart

Most respondents more than 86% expressed that having access to medical advice during an emergency, before the arrival of professional help, could be helpful. This highlights the potential benefits of immediate healthcare guidance in critical situations, empowering individuals to take appropriate actions and potentially improve outcomes. Such kinds of situations can be handled by the Emergency Assistance

## V. FUNCTIONALITY

The main goal of the system is to provide the user the feel, the experience as if it is having a conversation with a health professional and Chatbot plays a major role in it. The functionality of a chatbot is centered on its ability to process user requests/messages and generate appropriate responses. This is made possible through the integration of artificial intelligence markup language (AIML) [2] and natural language processing (NLP) techniques [1].

The knowledge base of the chatbot relies on AIML, which acts as its foundation. AIML comprises a set of patterns and corresponding responses that the chatbot utilizes when analyzing user inputs. These patterns are created to cover different types of user queries and commands. Through the utilization of AIML, the chatbot can recognize relevant patterns within user messages and retrieve suitable responses based on predefined rules. In simpler terms, AIML enables the chatbot to understand what users are saying and provide appropriate answers based on predefined patterns and rules.

NLP plays a crucial role in enabling the chatbot to understand and interpret human language. It involves the application of computational algorithms to analyze and extract meaning from text or speech inputs [2]. NLP techniques help the chatbot to identify key elements in user messages, such as entities, intents, and sentiments. By employing techniques like entity recognition, part-of-speech tagging, and semantic analysis, the chatbot can gain a deeper understanding of user inputs.

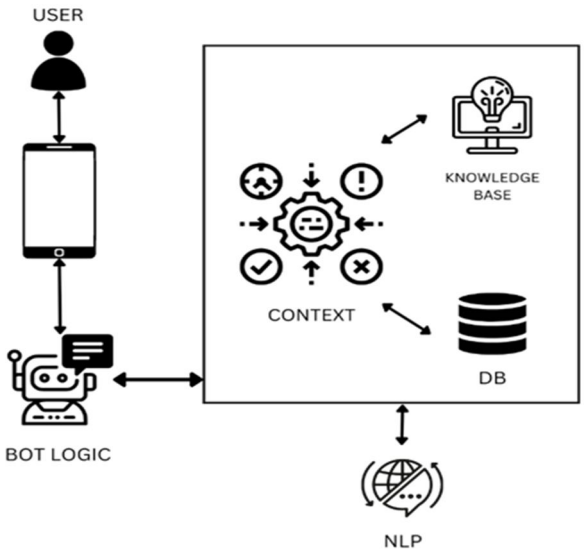



Figure 1: The Chatbot Process

Bot logic in a Chatbot refers to its programming and decision-making process, enabling it to understand user inputs and generate appropriate responses [4]. The knowledge base serves as a repository of information, utilizing AI to retrieve and store new phrases for accurate and contextually relevant responses.

## VI. PROPOSED SYSTEM

The proposed AI-integrated system comprises a Chatbot, Patient & Report management, Disease Detection, and Emergency SOS Assistance. This comprehensive system aims to enhance healthcare services, improve patient management, enable early disease detection, and provide immediate assistance in emergencies.

One of the key features of this system is an AI chatbot, designed to assist patients and doctors in their healthcare journey. The chatbot utilizes natural language processing and machine learning algorithms to analyze user inputs, understand their queries, and provide relevant and accurate responses [13]. Patients can engage with the chatbot to seek medical advice, inquire about symptoms, or get information about medications and treatments

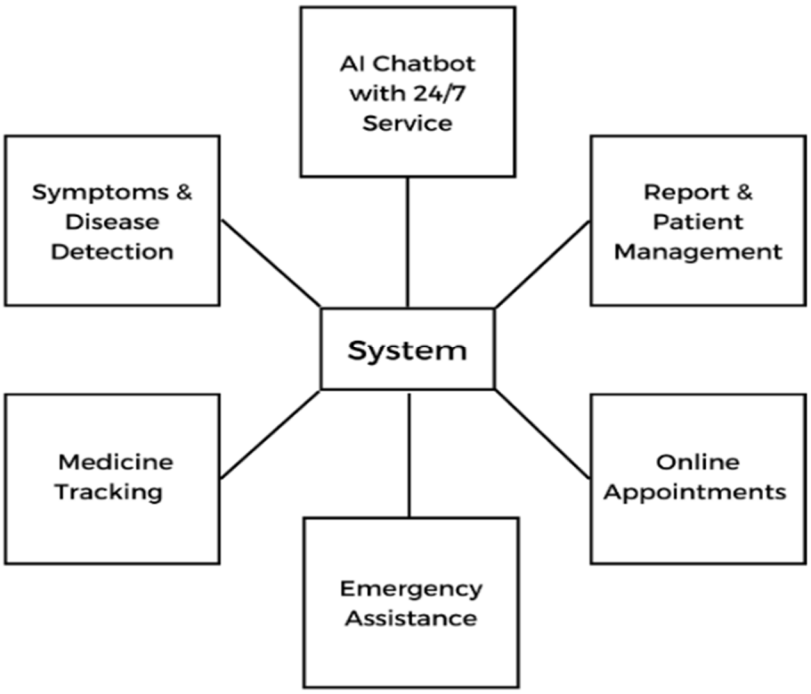



Figure 2: AI Proposed System Features

The chatbot follows a step-by-step process to interact with patients and doctors on the platform. First, it analyzes the user's message to identify the intent and extract important information such as symptoms or medication names. Next, it utilizes its extensive knowledge base and medical databases to provide appropriate recommendations, suggest possible diagnoses, or offer guidance on further actions [15].

Patients can benefit from the chatbot by receiving instant responses to their health-related queries, accessing reliable information, and obtaining preliminary guidance before seeking further medical assistance. Doctors, on the other hand, can leverage the chatbot as a valuable tool for triaging patients, saving time in initial consultations, and focusing on more complex cases.

By providing a user-friendly and interactive platform, this AI-powered system aims to empower patients, enhance healthcare accessibility, and optimize the doctor-patient relationship. With its intelligent chatbot feature, it revolutionizes the way for accurate to precise healthcare information is accessed and shared, ultimately leading to improved healthcare outcomes and patient satisfaction.

### *A. Disease Detection*

The swift detection and prevention of contagious diseases rely on real-time data and analysis. AI can play a crucial role in healthcare, from gathering and processing valuable data to programming surgical robots. [7]. AI in healthcare can offer various techniques and applications, improving data collection, processing, and even programming surgical robots [8].

The framework for disease detection modeling involves leveraging AI to analyze symptoms, diagnose diseases, and classify patterns using machine learning algorithms [7]. The system planning phase defines the abstract design of the framework, its behavior under different conditions, and its limitations. A disease recognition model is depicted in Figure 3, showcasing the use of functional machines and deep learning for accurate disease identification [9].

Preprocessing real-world data is essential before feeding it into the algorithms. This involves data cleaning, integration, correction, and standardization to ensure accuracy. The data is then divided into training and testing datasets, with the training data used to train the model and the testing data used to assess its accuracy [11].

Once the model is preprocessed, it undergoes testing to evaluate its performance. Analytical modeling techniques are employed to predict disease occurrences based on input factors and prior diagnoses [10].

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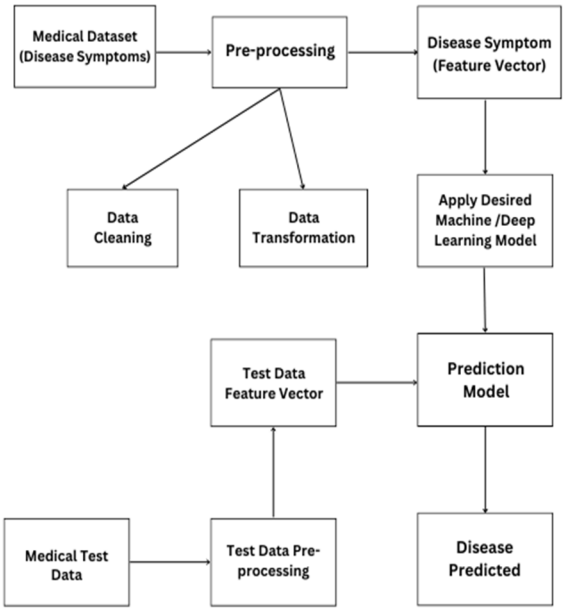



Figure 3: Disease Detection Flow [6]

In summary, AI-driven disease detection and modeling systems empower healthcare professionals to act swiftly and accurately by utilizing real-time data, advanced algorithms, and predictive analytics [6]. These systems have the potential to make a significant impact on public health and improve patient outcomes.

*B. Image Recognition Technology*

Image recognition technology, combined with artificial intelligence (AI), has and will keep revolutionizing in healthcare by enabling automated analysis and interpretation of medical images. With the ability to accurately identify and classify objects, patterns, and features within images, AI-powered image recognition systems assist healthcare professionals in diagnosing diseases, detecting abnormalities, and planning treatments [14]. This technology plays a crucial role in various medical imaging modalities, such as X-rays, MRIs, CT scans, and pathology slides. It enhances the efficiency and accuracy of image analysis, enabling faster and more precise diagnoses. By leveraging AI algorithms and deep learning techniques, image recognition technology in healthcare can detect subtle patterns and variations that may be challenging for human observers to identify [14]. It holds great promise in improving patient outcomes, optimizing workflow efficiency, and reducing healthcare costs. From early disease detection to personalized treatment planning, image recognition technology with AI is transforming healthcare by providing advanced tools for accurate and efficient medical image analysis.

*C. Medicine with AI*

When users input their symptoms or the name of a specific medicine, the chatbot can analyze the information and retrieve relevant data from its knowledge base [15]. It then applies advanced algorithms to process this information, considering factors such as the user's medical history, known allergies, potential drug interactions, and recommended treatment guidelines.

The self-learning aspect of the chatbot allows it to continuously improve its knowledge and accuracy over time. By analyzing user interactions and feedback, the chatbot can adapt and refine its suggestions, ensuring that the medication recommendations become more precise and tailored to individual needs [15]. This AI-powered medical chatbot offers several advantages. It provides quick and convenient access to medication information, helping users make informed decisions about their health. It can also assist in identifying potential drug interactions or contraindications, enhancing medication safety. Moreover, the self-learning capabilities ensure that the chatbot continuously evolves and stays up to date with the latest medical research and guidelines.

In the case of crucial medications prescribed for specific diseases or those with potential side effects, the chatbot strongly recommends seeking medical guidance before taking them.

### D. Doctor-Patient Relationship

The integration of AI in healthcare systems facilitates a seamless and efficient patient-doctor relationship through various digital features. Patients can easily book appointments with doctors, store and access their medical records, and communicate their concerns through secure online platforms [3]. This digital interaction eliminates the need for unnecessary physical visits to the doctor's office, saving time and resources for both patients and healthcare providers [16, 17].

With AI-powered capabilities, doctors can digitally verify patients, ensuring accurate identification and reducing the risk of medical errors. Additionally, AI systems offer the convenience of audio/video calling, enabling remote consultations and enhancing accessibility to healthcare services, especially for individuals with mobility limitations or those located in remote areas.

By leveraging AI, healthcare systems can streamline administrative processes, optimize scheduling, and improve overall efficiency. Moreover, AI-enabled analytics can provide valuable insights from patient data, enabling doctors to make informed decisions, identify trends, and offer personalized care based on individual health profiles.

### E. Emergency Virtual Assistance

An AI healthcare system incorporates advanced features to ensure users have access to immediate assistance during emergency situations. One of these features is a video/audio calling system, which allows users to connect with healthcare professionals virtually. In the event of a car accident, for example, the user can initiate a video call and receive real-time guidance from a physician or doctor. This guidance can be invaluable in providing instructions on how to administer first aid or stabilize the injured person until emergency responders arrive.

Similarly, the AI system can be instrumental in aiding a pregnant woman experiencing labor pains while being stuck in traffic on the way to the hospital. By initiating a video call, the user can receive virtual assistance from a healthcare professional who can provide guidance on breathing techniques, pain management, and instructions to keep the mother and baby safe until they reach the hospital.

Furthermore, the AI system incorporates a dedicated SOS section for emergency situations. In critical moments, users can quickly access this section, which offers multiple options [5]. They can either call important contacts, such as family members or emergency contacts, for immediate assistance or activate the ambulance service directly through the system. This ensures that urgent help is summoned promptly, potentially saving valuable time in life-threatening situations.

Overall, the integration of these features in the AI healthcare system empowers users to receive real-time guidance and support during emergencies. Whether it's through video/audio calls with healthcare professionals or the ability to quickly call for help via the SOS section using smart GPS tracking [12], the system aims to enhance emergency response and alleviate panic or difficulties faced by individuals in critical situations.

This system aims to transform healthcare delivery, enhance patient-doctor interactions, and improve overall healthcare outcomes. Embracing the potential of AI, this innovative platform revolutionizes healthcare by providing personalized care, efficient communication, and convenient access to medical services.

## VII. SCOPE OF THE RESEARCH WORK

In today's world, having knowledge about symptoms and allergies has become essential for individuals to take necessary precautions. Medical chatbots play a crucial role in fulfilling this need by providing instant messaging-based access to reliable healthcare information, anytime and anywhere. Many people turn to the internet to search for solutions or understand their symptoms, but they often encounter misleading information due to the vast amount of data that varies across articles. In critical situations and emergencies, the availability of healthcare guidance is paramount as it can potentially save lives until professional help arrives. This emphasizes the importance of integrating AI in healthcare to address such challenges and provide timely assistance. The proposed AI system in healthcare offers a promising solution by offering immediate support and maintaining a close digital connection with healthcare professionals. This system not only helps in addressing fatality conditions but also enables individuals to stay connected with their healthcare providers, ensuring continuous care and support. By using the power of AI, this system has the potential to prompt assistance and enhance patient outcomes thus revolutionizing the way healthcare is delivered.

### A. Future Scope

The future of AI in healthcare holds immense potential for further advancements and innovations. As technology continues to evolve, AI systems can become even more sophisticated and accurate in diagnosing diseases, recommending treatments, and providing personalized healthcare solutions. The integration of AI with emerging technologies like wearable devices, remote monitoring, and telemedicine can revolutionize healthcare delivery, enabling proactive and preventive care.

Furthermore, ongoing research and development efforts can help refine AI algorithms, enhance data privacy and security measures, and ensure ethical and responsible implementation of AI in healthcare. The future of AI in healthcare promises exciting possibilities for improving patient care, optimizing resource allocation, and ultimately transforming the healthcare landscape.

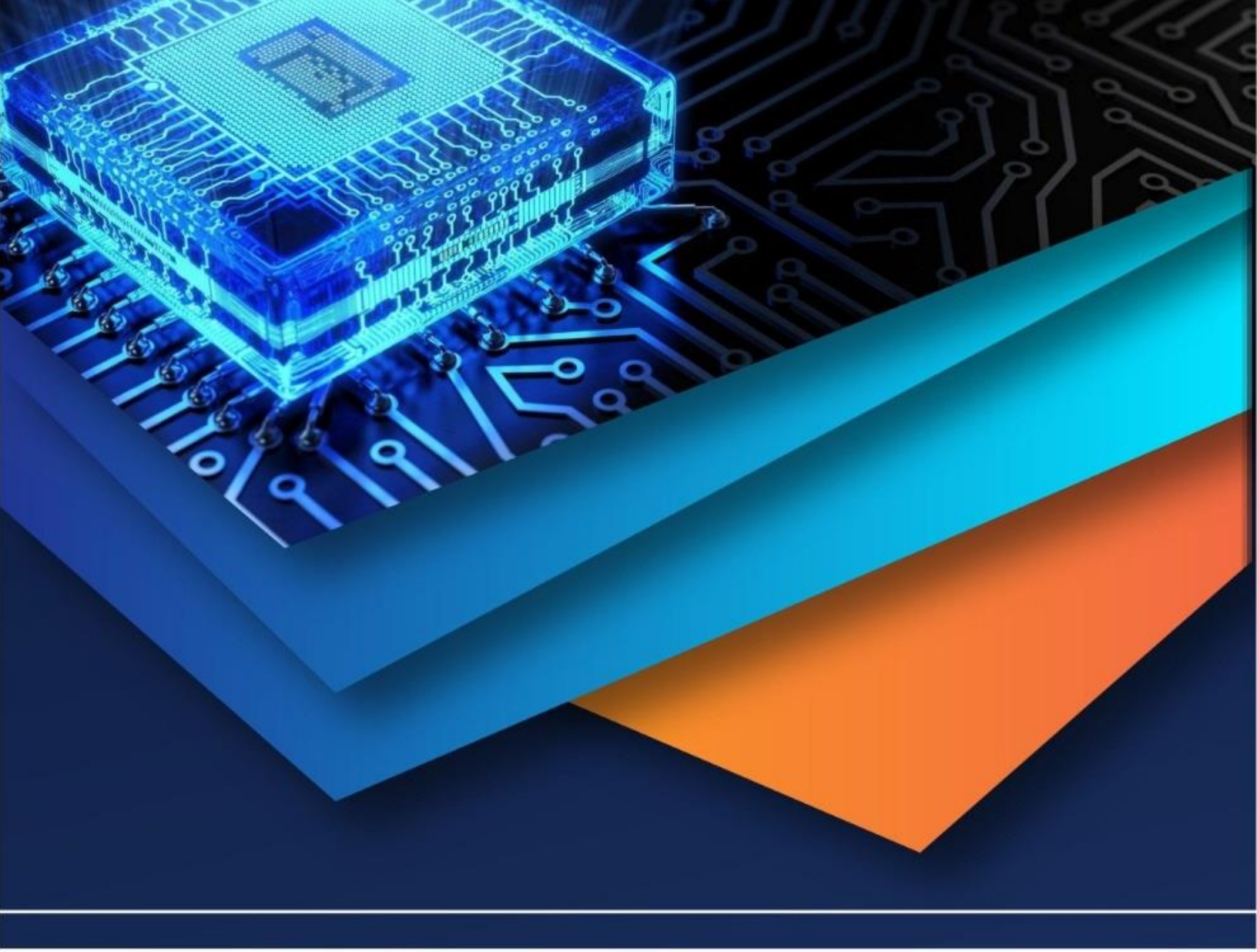
## VIII. CONCLUSION

In conclusion, this research paper highlights the transformative potential of AI in the healthcare sector. AI-powered solutions, such as chatbots, have emerged as valuable resources for combating misinformation, providing 24/7 healthcare guidance, and strengthening doctor-patient relationships. AI portals streamline communication and improve patient management, while emergency virtual assistance aids in life-saving interventions. Additionally, AI's role in disease detection enhances early identification and intervention. Overall, AI has the capacity to revolutionize healthcare, improving accessibility, accuracy, and efficiency for better health outcomes.

## REFERENCES

[1] Shreya Rastogi, “Natural Language Processing (NLP) based Chatbots”, Medium.com, 26 June 2020.
[2] Gopi Battineni, Nalini Chintalapudi and Francesco Amenta,” AI Chatbot Design during an Epidemic like the Novel Coronavirus”, MDPI, Basel, Switzerland, Published: 3 June 2020
[3] Dr. Paul Raj, Murali Krishna R, Solleti Manoj Krishna, Koppolu Harsha Vardhan, Kameswara Rao M ” EMERGENCY PATIENT CARE SYSTEM USING CHATBOT”, International Journal For Technological Research In Engineering Volume 6, Issue 7, March-2019
[4] Nahdatul Akma Ahmad, Mohamad Hafiz Che Hamid, Azaliza Zainal, Muhammad Fairuz Abd Rauf, Zuraidy Adnan,” Review of Chatbots Design Techniques”, International Journal of Computer Applications (0975 – 8887) Volume 181 – No. 8, August 2018
[5] Dr. Paul Raj , Murali Krishna R , Solleti Manoj Krishna , Koppolu Harsha Vardhan , Kameswara Rao M , “EMERGENCY PATIENT CARE SYSTEM USING CHATBOT”, International Journal For Technological Research In Engineering, March-2019
[6] Yogesh Kumar,1 Apeksha Koul,2 Ruchi Singla,3 and Muhammad Fazal Ijaz , “Artificial intelligence in disease diagnosis: a systematic literature review, synthesizing framework and future research agenda” , National Library of Medicine, 13 Jan 2022
[7] Shervin Minaee,∗,a Rahele Kafieh,b Milan Sonka,c Shakib Yazdani,d and Ghazaleh Jamalipour Soufie, “Deep-COVID: Predicting COVID-19 from chest X-ray images using deep transfer learning” Oct 2020.
[8] Kumar Y, Singla R. Federated learning systems for healthcare: perspective and recent progress. In: Rehman MH, Gaber MM, editors. *Studies in computational intelligence, vol965*. Cham: Springer; 2021.
[9] Jo T, Nho K, Saykin AJ. Deep learning in Alzheimer’s disease: diagnostic classification and prognostic prediction using neuroimaging data. Front Aging Neurosci. 2019.
[10] Keenan T, Clemons T, Domalpally A, Elman M, Havilio M, Agron E, Chew E, Benyamini G. Intelligence detection versus artificial intelligence detection of retinal fluid from OCT: age-related eye disease study 2: 10 year follow on study. Ophthalmology. 2020
[11] Sarao V, Veritti D, Paolo L. Automated diabetic retinopathy detection with two different retinal imaging devices using artificial intelligence. Graefe’s Arch Clin Exp Opthamol. 2020
[12] Shantanu Sarkar, Ambulance Assistance for Emergency Services Using GPS Navigation, IRJET , Sept 2016.
[13] Tarun Lalwani, Shashank Bhalotia, Ashish Pal, Shreya Bisen, Vasundhara Rathod, “Implementation of a Chatbot System using AI and NLP”, IJIRCST, May 2018.
[14] Jian Huang, Jing Li, Zheming Li, Zhu Zhu, Chen Shen, Guoqiang Qi, and Gang Yu ,” Detection of Diseases Using Machine Learning Image Recognition Technology in Artificial Intelligence”, Comput Intell Neurosci. 2022.
[15] Krishnendu Rarhi, Abhishek Mishra and Krishnasis Mandal, “Automated Medical Chatbot”, EasyChair, April 24, 2018.
[16] Ms.Sanjeevani P.Avhale, Ms.Wrushali R. Ajabe, Ms pallavi A. Chinchole, Ms Puja T. Changade Prof. N.K.Bhil, “Doctor Appointment Online Booking System”, IJCRT | Volume 6, Issue 2 April 2018.
[17] Mark Fanty, Stephen Sutton, David G. Novick, Ronald A. Cole, “Automated Appointment Scheduling”, January 1999.

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