

# Artificial intelligence in Healthcare

Prof. Sonia .H. Bajaj

(Computer Science & Engineering, G H Rasoni University, Email: [sonia.bajaj@ghru.edu.in](mailto:sonia.bajaj@ghru.edu.in))

Praful Rahate

(Computer Science & Engineering, G H Rasoni University, Email: [iamprafulrahate@gmail.com](mailto:iamprafulrahate@gmail.com))

Pallavi Wasade

(Computer Science & Engineering, G H Rasoni University, Email: [pallaviwasade25@gmail.com](mailto:pallaviwasade25@gmail.com))

Neha Dindewar

(Computer Science & Engineering, G H Rasoni University, Email: [nehadindewar@gmail.com](mailto:nehadindewar@gmail.com))

\*\*\*\*\*

**Abstract:**In the 21st century, the use of Artificial intelligence is more productive as it has capabilities to perform work that humans do, but more effectively, efficiently and at lower capital. The application of AI and robotics is getting immensely popular. AI and robotics can be a huge part of healthcare eco-system. This paper will provide you with a study of the basis of Artificial Intelligence and robotics application in healthcare and medical diagnosis. The major role of these fields is providing product diversity. Moreover, it can distinguish by providing effusive, stimulating and interdisciplinary data calculation.

**Keywords —**Artificial intelligence, healthcare, Artificial conversation entity (chatbot).

\*\*\*\*\*

## I. INTRODUCTION

### Basics of Artificial intelligence

AI could be clearly interpreted as devices and computer software that are competent in intelligent behaviours, such as estimating and understanding. It is a wide classification at the piercing perimeter of technological improvement, accumulating and altering each moment.

Machine learning is said to be the fundamental of modern AI and is basically an algorithm that permits computers to learn unassisted without obeying any definitive programming. As machine learning algorithms study a huge number of data, the algorithms' performance, quality and reliability enhance.

Artificial Intelligence had become mainstream in all technology development and innovation and it has the capability to become the major component of every industrial procedure.

But how precisely do these enterprises influence AI for their advantage nonetheless continues to be glimpsed? There's space for some certainly revolutionary notions but their implementation remains a talking notch among industry aisles. The challenges of machine learning and deep learning imply there is still some time to establish AI in the real world to its full potential.

The uses of AI technologies in Healthcare can provide a different angle to the innovation of the medical industry and it could be manipulated to revolutionize healthcare commerce.

AI is nevertheless a fairly new technology, particularly in the healthcare industry where adoption stays in its babyhood. As AI and machine learning methods evolve more elaborately, their practice circumstances have broadened; however, adoption of AI continues to be inadequate. To bring artificial intelligence to a different degree, developers must accentuate both surmised and inductive reasoning, and imitate those cognitive patterns in the machines they structured. An advantage of dynamic, deep learning solutions, is that they can clarify their perception and findings, crucial usefulness for complicated decision-making.

### **APPLICATIONS OF AI**

The different factors (can be studied and analyze) for the application of AI can be following -

#### **Combining Large Data Sets**

At the essence of AI are substantial data sets just settling there continuing to be examined. In the healthcare industry, it does not face the problem of scarcity of data. But when converse about the coalition of this data, aspects start to get a slight convoluted. To totally exploit the vast outcome of AI in the healthcare industry, this combination of data will need to be concentrated into a compact slot so that it can be convenient to anyone in real-time. Since the data is obtained and stored in numerous aspects, its main property of integration can become a huge responsibility. Until and unless this incentive does not get an antidote, the application of AI will in the medical field be restricted.

#### **Artificial Intelligence in Medical**

Healthcare is essential for a good life. Unfortunately, consultation with a doctor can be difficult to obtain, especially if we need advice on non -life threatening problems. The proposed idea is to create a system with Artificial Intelligence that can meet the requirements. Medical Chabot is built with medical applications having the potential to reduce healthcare cost and improves accessibility to

medical knowledge. Chabot's, which are useful for patients and health. The real benefit of the Chabot is to provide advice and information for a healthy life. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis based on their symptoms. Hence, people will have an idea about their health and have the right protection. Medical Imaging diagnosis can be enhanced exponentially using the practice and strategies of Artificial-Intelligence.

The request for AI in the radiology vicinities has seen a massive improvement and the current investment in this specific trend from innumerable tech giants is a varied indication of how medical imaging is truly on the plan when it arises as to AI application in the Healthcare industry. Use of AI can provide procedures to get more individual-based, understandable and convenient to provide findings.

Doctors can also productively observe coronary heart diseases as well as distinct cracks and wounds in bones.

#### **Robotics in surgery**

Robotic surgeries enable surgeons to manipulate elegant equipment and make more accurate lacerations. Real-time data can be generated during operations that can be useful for surgeons as well as patients for future diagnosis and treatment. The data can be collected and be used for different surgeries to make it more efficient. This can result in a reduction of casualties during critical operations.

#### **AI as conversation entity**

Artificial Intelligence can be manipulated to develop virtual chatbot systems that support patients and regulate their actions and medication schedules between different visits to the doctor. The artificial conversation entity can be provided with the diverse range of patient's historical data to maximize the efficiency that has to be provided to patients without the involvement of a doctor. It can be fed with different factors such as age, gender,

recent as well as past medical conditions, and behavioral patterns such as smoker or non-smoker. AI can be made to comprehend text and images of the patient and provide a valid solution as per the compassion of traits of a patient to enhance personal experience. It can deliver a fluent digital consultation.

Chat bots or Virtual Assistants have been designed to simplify the interaction between computers and humans and have hit the market. A chat bot is a software that uses artificial intelligence (AI) that can converse (or chat) with a user in natural language via virtual chat rooms, websites, mobile apps and messaging applications or through the telephone. Chatbots are often referred to as one of the most promising and advanced form of interaction between machines and humans. Although, from a technological perspective, a chatbot can only represent the evolution of a Question Answering system based on Natural Language Processing. Generating responses to user queries in human like natural language is one of the most common examples of Natural Language Processing leveraging in various enterprises' end-use applications. The talk bot applications slick interactions between services and people, improving customer experience.

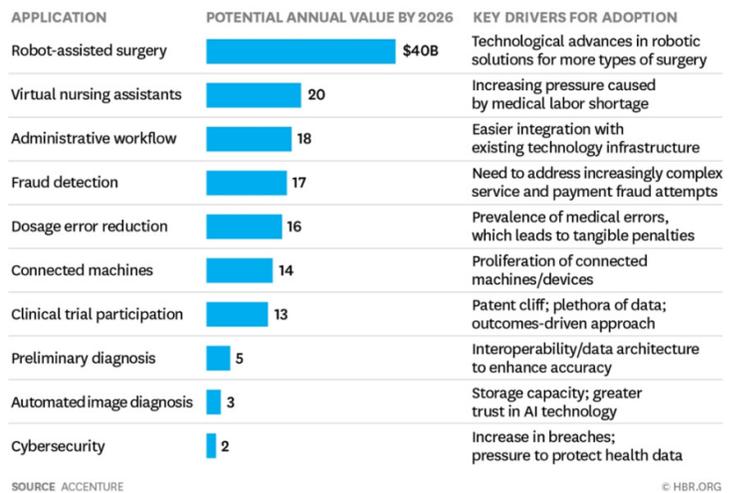
### Handling of Errors

Even an experienced doctor can make errors and can have flaws in the efficiency in procedures, they are humans and can lead to making mistakes. On the other hand, machines can minimize these blunders and can deduce in the preservation of life and as well as money.

### Medicinal productions

The established various ways of pharmaceuticals that is done by researching and trying on patients can be a long and costly process. The use of AI can make these proceedings quicker and economical. It can be done by analyzing the prevailing medicines, the AI will be competent to redesign so that it can cure the disease.

### 10 AI Applications That Could Change Health Care



*FIG 1. AI application in various disciplines of healthcare and their expected annual revenue (in billion \$) by the year 2026*

Artificial Intelligence gives the supreme power to mimic the human way of thinking and behaving to a computer. Artificial conversation entity are such kind of computer programs that interact with users using natural language. Chatbot works basically on Artificial Intelligence. Using this capability, we have decided to add some contribution to the Health Informatics.

Our project builds a text-to-text conversational agent that diagnosis patients explaining their condition using natural language. The bot asks for relevant information, e.g., age and gender, and medical history, and day to day activities and requests a list of symptoms. The system remembers past responses and asks progressively more specific questions in order to obtain a good diagnosis. The three primary components of our system are:

- (1) Identification and extraction of symptoms from the conversation with the user,
- (2) Accurate mapping of extracted symptoms to documented symptoms and
- (3) Specifying the disease and referring to an appropriate specialist if necessary. In its current

form, our bot's best application would be as a preliminary diagnosis tool that patients could use to assess their symptoms before going to the doctor, perhaps using the bot's specialist referral feature to choose the right care provider.

### **Conclusion**

The influence of AI on healthcare can be totally radical. It expands from clinical care to medication advancement, security, and clinical exploration. The growth of supplementary AI application is boosting the alternatives for the health sector to enhance their patient supervision and send out promising assistance.

The answer to comprehending why AI is so beneficial in simplifying and gauging the different application components is by realizing the real need behind the implementation of a computerized treatment for a healthcare endeavor strategy. In a nutshell, an organization can unlade a repetitive, data-driven assignment from a person and assigning it to the software.

Humans are considered to be susceptible to make errors in database entry, they need halts in work, less productive than a machine, and less efficient than AI for certain type of works. AI can help is reducing such kind of errors that can be encountered, as well as it can help in managing finances.

- [1] Wan Wynsberghe A, Li S. A paradigm shift for robot ethics: from HRI to human-robot-system interaction (HRSI) 1. 2019. Doi:10.2147/MB.S160348
- [2] Kidd C. Introducing the Mabu personal healthcare companion. Available from: <https://www.cataliahealth.com/introducing-the-mabu-personal-healthcare-companion/>. Published 2015.
- [3] Orrell C. Trust and accuracy in diagnostic AI: your. MD's story so far. Available from: <https://medtechengine.com/article/your-md/>.
- [4] Huang J, Zhou M, Yang D. Extracting chatbot knowledge from online discussion forums. In: IJCAI International Joint Conference on Artificial Intelligence; 2007; Hyderabad, India:423-428
- [5] Veruggio G, Operto F. Roboethics: social and ethical implications roboethics. In: Siciliano B, Khatib O, editors. *Springer Handbook of Robotics*. Berlin: Springer; 2008:1499-1524.
- [6] Mark Coeckelbergh. *Ethical Theory and Moral Practice* April 2010, Volume 13, *Issue 2*, pp 181-190. Health Care, Capabilities, and AI Assistive Technologies
- [7] Dolores Derrington. Artificial Intelligence for Health and Health Care. 2017. [https://www.healthit.gov/filesPDF/Artificial Intelligence for Health and Health Care - HealthIT.gov](https://www.healthit.gov/filesPDF/Artificial%20Intelligence%20for%20Health%20and%20Health%20Care-HealthIT.gov)
- [8] [Brian Kalis](#), [Matt Collier](#), [Richard Fu](#). 2018. 10 Promising AI Applications in Health Care. <https://hbr.org/2018/05/10-promising-ai-applications-in-health-care>