



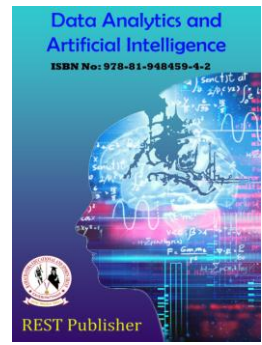
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Artificial Intelligence on Medical Fields

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Abstract. This paper is about a overview of AI in medical field, dealing with recent and future applications that are related to AI. The aim is to develop knowledge and information about AI among the primary care physicians in the health care. Firstly, I've described about what is Artificial Intelligence then, who's the father of it, what are the types of AI that is used in the medical field, features of AI, approaches and its needs. This paper is also about how AI is used in the health care, diagnosis, creation of new drug and delivery of drug, AI in COVID-19 pandemic, how it is used to analyze CT scans, x-rays, MRIs and about how Machine Learning is used in the health care and also how google is dealing with the future problem using Machine learning.

1. WHAT IS ARTIFICIAL INTELLIGENCE?

AI has become a popular application that performs complex tasks which required human input such as playing chess or dealing with customers in online. The term is used often with its subfields, which include **Machine Learning (ML)** and **Deep Learning**. For example, machine learning is used to learn or improve their performance based on the data they consume. It's important to note that not all AI is machine learning. Many companies are making interesting investments using data science. Data science is used to extract value from data and combines skills from various fields and analyzes data that is collected from various sources.

2. FATHER OF ARTIFICIAL INTELLIGENCE

Mr. John mc carthy is the father of artificial intelligence who defines "the science an intelligence of enigneering of making intelligent machines".

3. TYPES OF AI USED IN HEALTHCARE

- Natural Processing Language (NLP)
- Robotic Process Automation
- Physical Robots: Machine Learning:

4. TOP FEATURES OF AI

- Health
- AI against Covid-19
- Disease identification
- radiology and Radiotherapy
- Clinical trial
- Drug discovery
- Personalized medicine
- Rare disease identification
- Surgery (diagnosis)

5. NEED FOR ARTIFICIAL INTELLIGENCE IN MEDICAL FIELD

Machine that determines solution to complicated problems by applying algorithms in a computer-friendly manner various medical fields to make human works easier.

6. APPROACHES OF AI

ED Medical Imaging can reduce cost and time involved in the analysis of AI scans, potentially allowing the use of more scans for better target treatment. AI has shown results associated with the detection of conditions such as pneumonia, breast and skin cancer and eye diseases.

- CH echocardiography – AE echocardiography helps analyze scans that detect heartbeat patterns and diagnose coronary heart disease.
- UR surgeries are used in AI-controlled robotic tool research such as bandaging to close wounds in cataract surgery.

7. HOW ARTIFICIAL INTELLIGENCE IS USED IN MEDICAL FIELD?

AI is developing in the public health sector and in the primary health care. The computer applications of AI will help physicians to identify easily about the patients who are in need of more precaution and protocols. AI is used by Primary care physicians to take notes, analyze the problems with patients and in taking various tests. The organization of the health care in the world uses powerful technologies to open large volumes of health data and diagnostics. “Berg” an US company that has been using the AI to Research and development in diagnosis and therapeutics in the field of oncology, endocrinology and the neurology based systems In the crucial period of COVID-19 pandemic, it created a biggest wave for many health systems. The application AI is also used to develop predictive measures that could help to minimize the spread of this pandemic. The COVID-19 also created many organizations in the entire world to test the new AI-technologies, such as algorithms that are created for helping the patients. Tools of AI are used to analyze CT scans, x-rays, MRIs and other images for finding the human problems. The radiologist will discover the problem and could perform the task more effectively than a human and gives accurate information about a cancer, infection or disease by using the high end scanning machines. Clinical decision and imaging analysis are the roles of AI that helps to make decisions about the patient's health, medication and other treatments. It is possible to apply AI in both the structured and unstructured data with the machine learning and the natural language processing. To develop a specific part to a particular disease for taking trials may take many years and costs many dollars. AI will be an integral part of medicine in the forthcoming days. so, it is very important to teach the upcoming medical trainers about the concepts and application of AI. With the help of AI, we would be able to embrace the new concept of “precision medicine.” With the help of various conditions like cardiomegaly the research has found that a Human AI (hybrid model) is 8.5% powerful. They also said that AI cannot always replace the human in this situation but it can be augment processes to make them more efficient The AI application which is used mostly in the pharmacy, which is the top technology that is shaping the future of it. With the rise of 21st century technologies, this has been changing. In future we will definitely see a completely different design and trials based on drugs. IBM has discovered that approx. 161 billion GB of data is used by the healthcare domain as of 2011. Let us consider a recent application which is making the future of medical fields easier. Like visual perception, speech recognition, decision making and translation between many languages which will actually save money and the time. In recent times using AI application we can directly communicate with various doctors from different countries. In Every medical journal, the symptoms of the problem and the treatment for that particular problem and its side effects are faster than any human. This application will bind the machine learning and system neuroscience to enhance various different algorithms that act as the human brain. Recently, Google’s Deep Mind Health is discovering new ways by using machine learning algorithms to find the difference between the cancer and the healthy issues so that the AI could understand the problem and will provide a solution related to it. The main goal is to improve the result accuracy of Radiotherapy.

8. ALGORITHM

Logistic Regression: This machine-learning algorithm is used to predict the current scenario of the categorical dependent variable through the use of predictor variables. It is often used for classifying and predicting the probability of an event, such as disease risk management, which assists doctors in making critical medical decisions. It also helps medical institutions target patients with more risk and curate behavioral health plans to improve their daily health habits. The logistic regression equation is derived from the linear regression and sigmoid function. The Linear equation gives us:

$$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i, \quad i = 1, \dots, n.$$

Sigmoid function after substituting for y from the above equation:

$$p(x) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x)}}$$

$$\text{logit } p(x) = \ln\left(\frac{p(x)}{1 - p(x)}\right) = \beta_0 + \beta_1 x$$

The resulting solution is called the logistic regression equation. This algorithm can be used in various health care to check how many patients are cured and how many patients are not cured even we can also extend this algorithm to find how many patients are under medication.

9. CONCLUSION

The organization of the health care in the world uses powerful technologies to open large volumes of health data and diagnostics. "Berg" an US company that has been using the AI to Research and development in diagnosis and therapeutics in the field of oncology, endocrinology and the neurology based systems In the crucial period of COVID-19 pandemic, it created a biggest wave for many health systems. The application AI is also used to develop predictive measures that could help to minimize the spread of this pandemic. The COVID-19 also created many organizations in the entire world to test the new AI- technologies, such as algorithms that are created for helping the patients. Tools of AI are used to analyze CT scans, x-rays, MRIs and other images for finding the human problems. The radiologist will discover the problem and could perform the task more effectively than a human and gives accurate information about a cancer, infection or disease by using the high end scanning machines. Clinical decision and imaging analysis are the roles of AI that helps to make decisions about the patient's health, medication and other treatments.

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