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Artificial intelligence in healthcare: Setting new algo RHYTHM in medicine

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INTRODUCTION

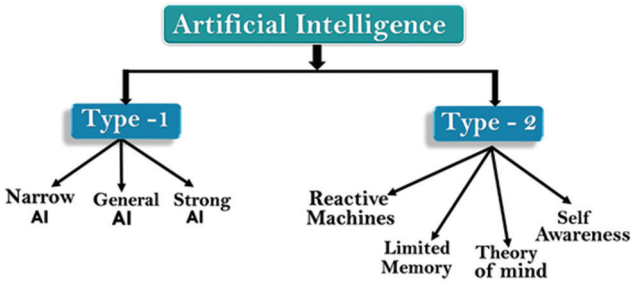
Artificial intelligence (AI) is a rapidly expanding avenue in science and is often used to describe the use of computers, big data mining, modeling, and network that may simulate intelligent behavior and critical thinking similar to a human being but at an exceedingly fast pace.[1] What lies at the heart of AI are intelligent algorithms that drive the whole process integratively, imparting the decisive ability to machines. The AI market is expected to grow at a rate of 39.4% by 2022–2028.[2]

HISTORY

British mathematician Alan Turing's 1950 paper "Computing Machinery and Intelligence" established AI's fundamental goal and vision. Fundamentally, AI is a branch of computer science that aims to answer Turing's question of replicating human intelligence as machines.

CLASSIFICATION OF AI

Since AI research aims to make smarter algorithms evolve and emulate human-like functioning, the degree to which an AI system can replicate human capabilities is used to determine the types of AI. AI is classified as follows:



(Image taken from: https://www.javatpoint.com/types-of-artificial-intelligence).

AI APPLICATIONS IN HEALTHCARE

The volume, magnitude, and complexity of data in healthcare mean that AI will be increasingly applied and exploited, with several types of AI already being employed by researchers, clinicians, and data analysts. AI is a collective term, not just one technology, with an immediate relevance to healthcare. Few AI technologies of high importance to healthcare are as follows:[3]

1. Machine learning, neural networks, and deep learning
2. Natural language processing
3. Physical robots
4. Rule-based expert systems

The AI-associated health-care market is growing at an exponential pace and is expected to reach USD 6.6 billion by 2021.[4]

ALGORITHMS IN AI

Precision medicine initiatives can be divided into three types of clinical areas: Complex algorithms, digital health applications, and "omics"-based tests.[5]

COMPLEX ALGORITHMS

Large genomic datasets and informatics related to demographic data or diagnostic reports are exploited by machine learning algorithms for prediction and prognosis. This is coupled with patient healthcare data, such as treatment protocols, treatment response, response to

therapy, and health monitoring, with data input from clinicians, researchers, and the public domain.[6] High throughput big data from population-based studies are used with machine learning algorithms to establish correlations, build predictive models, and provide customized treatment protocols.[7-9] In Omics based era, data from genomics, proteomics, and metabolomics are exceedingly used to address and identify health-related problems in large study cohorts. This will provide opportunities for translation and transition from bench to bedside through precision medicine.[10]

Ruby Dhar[1], Arun Kumar[2], Subhradip Karmakar[3]
[1]Scientist, [3]Additional Professor, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi, [2]Professor, Department of Biochemistry, Jagannath Gupta Institute of Medical Sciences and Hospital, Kolkata, West Bengal, India

Address for Correspondence:
Dr. Ruby Dhar, Scientist, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi, India.
Mobile: +91-9999612564. **E-mail:** rubydhar2020@gmail.com

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Authors Contribution:
All authors contributed equally toward scripting of this editorial.

Work attributed to:
Department of Biochemistry, All India Institute of Medical Sciences, New Delhi, India and Department of Biochemistry, Jagannath Gupta Institute of Medical Sciences and Hospital, Kolkata, West Bengal, India

Orcid ID:
Dr. Ruby Dhar - https://orcid.org/0000-0003-3600-6554
Dr. Arun Kumar - https://orcid.org/0000-0002-8800-0296
Dr. Subhradip Karmakar - https://orcid.org/0000-0002-4757-8729

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