ARTIFICIAL INTELLIGENCE: A MODERN ERA OF MEDICINE

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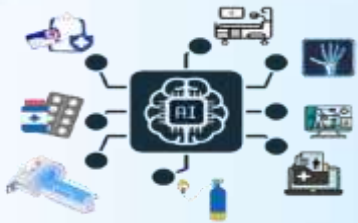
Introduction

Artificial Intelligence (AI) holds transformative potential for the healthcare industry, providing innovative solutions for diagnosis, treatment planning, and improving patient outcomes. As AI continues to be integrated into healthcare systems, it promises advancements across various domains. In 2016, the biggest amount of investments in AI research were in healthcare applications compared with other sectors.

AI in medicine

Virtual part
Electronic health record systems to neural network-based guidance in treatment decisions.

Physical part
Robots assisting in performing surgeries, intelligent prostheses for handicapped people.

The basis of evidence-based medicine is to establish clinical correlations and insights via developing associations and patterns from the existing database of information.
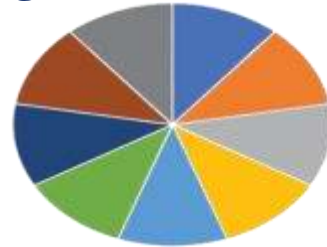
Computer diagnosing Techniques

Flowchart approach
- This requires feeding a large amount of data into machine-based cloud networks.
- The outcomes of this approach are limited because the machines are not able to observe and gather cues which can only be observed by a doctor during the patient encounter.

Database approach
- utilizes the principle of deep learning or pattern recognition that involves teaching a computer via repetitive algorithms in recognizing what certain groups of symptoms or certain clinical/radiological images.

Emerging role of AI in health care

- Drug development
- Health montoring
- Managing medical data
- Disease diagnostics
- Digital consultation
- Personalized treatment
- Analysis of health plans
- Surgical treatment
- Medical teratment

AI could aid in radiology by finding abnormal cases as well as identifying quick negative exams in computed tomographies, X-rays, magnetic resonance images especially in high volume settings, and in hospitals with less available human resources.

AI in surgery

The Da Vinci robotic surgical system developed by Intuitive surgical has revolutionized the field of surgery especially urological and gynecological surgeries. The robotic arms of the system mimics a surgeon's hand movements with better precision and has a 3D view and magnification options which allow the surgeon to perform minute incisions.

Healthcare conversational projects

Apple health   **Fitbit**   **Google health**

Monitor heart rate, activity levels, sleep levels, and allow patients to seek early care.

AI helping physicians

IBM's Watson Health will be equipped to efficiently identify symptoms of heart disease and cancer. Stanford University has Program AI-assisted care (PAC) with intelligent senior wellbeing support system and smart ICUs, which will sense any behavioral changes in elderly people living alone and ICU patients.

PAC is also extending its projects over reducing hospital acquired infections.

AI was used to screen existing medications, which could be used to fight against the emerging Ebola virus menace which would have taken years to process .

Discussion

With the help of AI, we would be able to embrace the new concept of **"precision medicine".** AI would be an integral part of medicine in the future and mutually beneficial balance between effective use of AI and human strengths will provide great impact to the medical field.

Advantages
- Saves money Better monitoring
- Decreased workload, increase patient face time, Increase time on critical cases
- Efficiency, accuracy, precision

Disadvantages
- Lack of human touch- empathy, emotional intelligence
- Loss of jobs

References

1.Mintz Y, Brodie R. Introduction to artificial intelligence in medicine. Minim Invasive Ther Allied Technol. 2019;28:73–81.
2.CB Insights Research. Healthcare remains the hottest AI category for deals. 2017.
3.Hamlet P, Tremblay J. Artificial intelligence in medicine. Metabolism. 2017;69S:S36–40.
4.Fenton JJ, Taplin N. Influence of computer-aided detection on performance of screening mammography. Engl J Med. 2007;356:1399–409.
5.Haque A, Guo M, Alahi A, Yeung S, Luo Z, Rege A, et al. Towards vision-based smart hospitals: A system for tracking and monitoring hand hygiene compliance. Machine learning in healthcare conference (MLHC) 2017.