EDITORIAL

Ensuring AI's subservience: a new dimension of healthcare leadership

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The need, curiosity, and concept of machine learning had set foot since the work of logic theorists during the year 1956. Human's fascination engaging with machines or robots has progressed, even within the realm of screens. The in The Wizard of Oz has evolved significantly as Andrew the robot the in the "Bicentennial Man." The character of the heartless Tinman from "The Wizard of Oz" has evolved significantly to manifest in the form of "Andrew the robot" in "Bicentennial Man." The sophistication exhibited by Ava in the film "Ex Machina" further captivates the possibility of equating with machines albeit with a darker implication. Our fears of "singularity" taking over humans are far exceeded by the solutions provided for our living conditions, by evolving Artificial intelligence (AI) through the tremendous pace of progression of machine learning, algorithm development, and neural networks.[1]

AI is reshaping fundamental life concepts and developing new paradigms for human living, societal functioning, and digital outreach. Healthcare is also a domain that is not barred from the usage of AI. The Internet of Things, smartphones, and self-driven automobiles are all the forms of economic opportunities that AI-versant professionals are benefiting from Santana and Díaz-Fernández.[2]

The onus of channeling the AI evolution for maximizing healthcare benefits is on the healthcare leaders. Soon, healthcare organizations will be led by people who have successfully employed AI tools in their healthcare service. Yet, healthcare leaders must possess a thorough understanding of the potential applications of AI tools. Predictive analysis, public health management, mapping of the disease pattern, diagnostic accuracy, and impactful clinical decision-making are all possible dimensions of AI-backed innovations.[3]

According to Statista, the AI healthcare market with a value exceeding $10 billion in 2022, is anticipated to surpass $179 billion in 2030. Statista also quotes a compound annual growth rate of 19% from 2023 to 2032.[1]

Visionary healthcare leaders should channel the data usage for AI development and employability for different facets of healthcare services. Presently, AI applications are elevating diagnostic accuracy in the advancement of radiology tools. This heightened accuracy not only empowers radiologists utilizing AI but also reduces the necessity for tissue sampling in cases where current radiological techniques yield equivocal results. Additionally, the predictability of tumor progression can be improved through the utilization of AI tools. Currently, diagnostic accuracy is thus enhanced through AI applications for the advancement of radiology tools. The accuracy there of will not only empower the radiologists utilizing AI but will also curtail the need for tissue sampling in cases where current radiological techniques yield equivocal results. Additionally, the predictability of tumor progression can be improved through the usage of AI tools.[3]

Medical data analysis through electronic healthcare record keeping can effectively strategize policies for equitable healthcare provision. Refill of medications and the regulation of controlled substances can be managed with the AI-powered virtual assistants who can also provide support in answering patient queries, scheduling appointments, and offering health-related information. Healthcare management is currently undergoing advancement by organizations that have successfully employed AI applications like "Merative (Formerly IBM Watson Health)," "Enlitic," "Regard," "Twill," and "Viz.ai." For the users such applications provide alerts to

the doctors when a patient encounters a medical problem or use of medicine, thus enabling a timely action.[2]

The post-covid world has learned its lessons. Disease mapping and predictability for spread have gained significance in terms of health impacts. AI health tools help identify infection patterns and potential populations at risk.[2]

Scrutiny of images under the microscope defines more than 70% of healthcare decisions. Now screening for cervical cancers through AI-based pathology applications is helping in the direction of reducing mortality. Similarly, the data extracted from microscopic images are aiding in algorithm development for quicker clinical solutions.[1]

"Bard," "Perplexity," and "ChatGPT" are the steppingstones of open access platforms for AI usage. Once conversant with paraphrasing questions, one can broaden the use of different AI tools and applications. Even the paraphrasing itself is now handled by users of "Quillbot," an effective AI tool for beginners, and researchers. Medical students and young researchers are becoming more apt at "Scribbr" for their proofreading and citation management. AI-backed Electronic Health Records are data-rich resources to analyze risk scoring for different diseases. Predictive analysis is developing algorithms and machine learning to trim up the existing "clinical decision support tools." These tools being around the corner will provide support in critical care situations for young clinicians and paramedical staff. The same tools can generate personalized treatment plans for individual patients. Through smart devices, these plans, grounded in individual health profiles, genetic information, and response to past treatments, can be effectively transferred to respective patients.[4]

Robotic process automation is an integrated computer software that can repetitively perform certain tasks thus offering management, archiving, and financial solutions. However, there are ethical, medical, occupational, and technological challenges that need to be addressed. It is important that the national healthcare system and institutes establish protocols for addressing ethical concerns associated with AI and to establish governance strategies to optimize the positivity of use. Research has demonstrated that, up to this point, no jobs have been endangered by the integration of AI.[4]

There are four levels of AI. Currently, the AI tools dwell around the first two levels of "Reactive AI" and "Limited Memory," where the AI can manage complex tasks. However, the outliers are still a possibility. All the AI-based tools and applications are working at these two levels.[5]

The subsequent stage in AI evolution is the "Theory of Mind," enabling AI to infer personal motives and reasoning, allowing for individualized responses accordingly. Current algorithm development, data acquisition, and machine learning are aiming for the level of "Theory of Mind." However, the final level of AI will be of "Self-awareness" which may lead to chaos and "Singularity." However, this final stage is too far from being achieved and has multifactorial impediments.[5]

The current scope of AI-based tools for healthcare is working in areas of patient engagement, healthcare systems, and organizational support. However, with the broadening of the scope the next mainstay is the reliance on AI-based diagnostic workups. Data analysis, algorithm development, machine learning, and AI-based solutions need to be managed categorically for their success, employability, and usage. More complex healthcare tasks are still in the making and have certain outliers and ethical impediments. All these landmarks of digital evolution and the interface of machine learning need to be channelized for our benefit and our expectations are to be gauged meticulously.[6]

List of Abbreviation

AI Artificial intelligence

Conflict of interest

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References

1. Alowais SA, Alghamdi SS, Alsuhebany N, Alqahtani T, Alshaya AI, Almohareb SN, et al. Revolutionizing healthcare: the role of artificial intelligence in clinical practice. BMC Med Educ. 2023 Sep 22;23(1):689. https://doi.org/10.1186/s12909-023-04698-z
2. Santana M, Díaz-Fernández M. Competencies for the artificial intelligence age: visualization of the state of the art and future perspectives. Rev Manag Sci. 2023;17(6):1971–2004. https://doi.org/10.1007/s11846-022-00613-w
3. Singh V. Unleashing AI: a thought-provoking look at the future of humanity. Amazon; 2023 Apr 6. Available from: Amazon.com
4. Davenport TH. From analytics to artificial intelligence. J Bus Anal. 2018 Jul 3;1(2):73–80. https://doi.org/10.1080/2573234X.2018.1543535
5. Lee D, Yoon SN. Application of artificial intelligence-based technologies in the healthcare industry: opportunities and

challenges. Int J Environ Res Public Health. 2021;18(1):271–5. https://doi.org/10.3390/ijerph18010271
6. Smeresky B, Rizzo A, Sands T. Optimal learning and self-awareness versus PDI. Algorithms. 2020;13(1):23–6. https://doi.org/10.3390/a13010023

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