

ARTICLES

The Use of Artificial Intelligence in Healthcare: Cure or Curse

Aissatou Diallo^{1a}

¹ Department of Public Health, Cabrini University

Keywords: healthcare, technology, data, privacy

<https://doi.org/10.62962/001c.88333>

Edward Waters University Undergraduate Research Journal

Vol. 1, Issue 1, 2023

The purpose of this paper is to investigate the uses and impact of Artificial Intelligence (AI) technology in the 21st century. It has been found that AI has both advantages and disadvantages in our society. AI can be helpful in healthcare and medical research, but it can also be harmful to our everyday lives due to the uncertainties it comes with. As a manmade product, AI is bound to have accidents and make errors which could be dangerous if we, as a society, depend on it. Thus, AI should not dominate all aspects of human socialization. Even though AI will be a part of our lives, we must also be aware of the potential dangers of AI for society. This paper argues that people should really educate themselves about the positive and negative sides of AI before deciding whether AI should really be our future.

Introduction

Artificial Intelligence (AI) is one of the most innovative and distinctive byproducts of the digital revolution. It is no longer a futuristic concept or fantasy but an impactful social reality of the 21st century dominating all aspects of human socialization. From chatbots and virtual assistants to self-driving vehicles and robotic engineers, AI can be found in everyday life. In the healthcare industry, AI is particularly used in administrative and managerial tasks, medical research and trials, disease prevention and diagnosis, and medical treatment and rehabilitative care. This paper aims to investigate the uses and impact of AI technology in healthcare. The format of the paper is as follows: (1) a brief overview of AI technology in healthcare, (2) the advantages and disadvantages of AI in healthcare, and (3) remarks on the social impact of AI in healthcare.

Artificial Intelligence (AI)

AI has created a cultural, social, and technological shift in information processing and problem-solving. By employing computer systems and machines to perform activities and tasks that previously only humans could, AI has evolved into a dynamic entity independent of human vulnerabilities and imperfections. Voice assistants like Amazon's Alexa and Google Voice are prominent and widely used examples of AI technology. Algorithms and large

^a Mentors: Dr. Erin McLaughlin, Cabrini University; Dr. Seong Yoon, Edward Waters University

datasets have allowed for the development of facial recognition software for privacy protection (apps, phones, etc.). AI applications continue to expand in other fields, such as transportation, education, and marketing (Bajwa et al., 2021; Bohr & Memarzadeh, 2020).

AI in Healthcare

In healthcare, a subset of AI methods known as deep learning (DL) are transforming the pharmaceutical practice and the delivery of care through artificial neural networks created to enhance complexity and mirror the abstract rational nature of humans. AI technology is used to examine medical images, provide tailored treatment recommendations on healthcare apps, and develop therapeutic drugs. By studying large and comprehensive datasets, machines can identify important patterns and trends to perform tasks quicker and make better predictions. These datasets consist of genetic information, demographic data, and digital or electronic health records (HER). Healthcare apps that allow for activity tracking and monitoring utilize DL algorithms to make accurate predictions and offer professional medical advice to users (Bajwa et al., 2021; Bohr & Memarzadeh, 2020). Some examples include women's health apps (cycle track, emotional changes, fertility advice/treatment, etc.), fitness apps (heart rate monitors, calorie counters, nutrition trackers, etc.), and wearable devices (Apple watches). Additionally, applications of DL are being used to eliminate medical errors and ensure the appropriate diagnosis of health conditions through computer vision algorithms, video analysis obtained from surgical operations, and high-resolution images (Gamble, 2020).

Genetics-based solutions are an interesting subset of AI applications in healthcare. Analyzing patients' genetic data can provide innovative solutions to developing drugs targeting specific genomes, examining disease markers, and potentially curing autoimmune diseases. A biotechnology firm, Deep Genomics, is utilizing data gathered from a large genetic pool and electronic health records to recognize existing and the latest therapeutic targets. The firm effectively works towards a new development in modern medicine by creating tailored genetic medications (Bohr & Memarzadeh, 2020). When administering clinical trials for new drugs, DeepTox (a subset of the DL model) is used to determine the various levels of toxicity of compounds found in drug molecules. Additionally, healthcare-centered AI databases allow for the storage and retrieval of datasets. For example, Molecule Net is a public database credited with toxicity evaluation for over 700,000 drug compounds. DL technology is initiating profound change in the pharmaceutical industry and the practice of medicine (Rajkomar et al., 2019).

The integration of virtual reality (VR) systems in medical schools and educational curricula is increasing at a substantial rate. VR and simulation techniques are used to teach medical students about surgical procedures, concepts of anatomy, patient interactions, and autopsy pathology. In healthcare settings, VR technology is helpful in garnering positive patient experience outcomes and improving overall health outcomes. For example,

patients seeking rehabilitative care and physical therapy are often introduced to VR technology to improve movement and motor function (playing with a virtual ball, virtual “games”). VR technology can provide meaningful clinical results while also maintaining an entertaining and pleasurable patient experience (Ravenscraft, 2022).

Applications of AI can also be found in medical surgeries and prosthetic devices. Sensors are being integrated with current surgical techniques to improve surgical performance, reduce medical mistakes, and mirror human sensory perceptions such as touch. Artificial tactile sensing is an example of artificial sensory devices in medical technology created to recognize malignancies, improve diagnosis, and assist with surgical or physician tasks. For example, artificial tactile sensory devices are used to detect and analyze tumors or other abnormalities in the breast, liver, or brain. AI is also attracting attention in neuroprosthetics. Brain-machine interfaces (BMI) are useful in improving the motor and cognitive functions of individuals living with disabilities such as Parkinson’s disease or multiple sclerosis. BMI allows people to outsource critical human functions to computer-based technology (Bohr & Memarzadeh, 2020). For example, hearing aids are used by deaf or older adults to improve their hearing ability (Leuven, 2021). Applications of AI in the medical field are the most intimate technological milestones in connecting humans with machines.

Benefits of AI Use in Healthcare

There is no doubt that AI applications have led to revolutionary and impactful global changes and experiences. Some of the benefits of AI in healthcare include accessibility and distribution of care to a global audience, prevention of medical errors and early diagnosis, cost-effective interventions, optimal support for surgical procedures and systems, and positive health outcomes. Access to equitable and safe healthcare is a global challenge. The health systems of developing countries are plagued with fragmented networks of care, poorly equipped and maintained health and medical facilities, and a lack of sufficient resources to prevent disease and boost population health. AI systems have proven to be beneficial in improving global health by developing digital platforms for health maintenance and disease progression (Patel, 2020). AI tools have outperformed people in several aspects, such as surgical procedures, detecting malignancies, and identifying errors in medical procedures. As a result, medical errors are prevented from occurring, and diseases are detected at an earlier stage. Mobile health programs have been useful interventions in tracking symptoms and signs of diseases, collecting valuable data on population health and statistics, and generating accurate predictions on potential health threats. AI tools are more economical in terms of overall costs and expenditures. For example, approximately \$18 billion were saved in administrative costs because of AI-integrated tools, such as image diagnosis, clinical trials, and cybersecurity (Patel, 2020).

Disadvantages of AI Use in Healthcare

Some of the disadvantages of AI include technical errors and accidents, privacy concerns, harmful bias, and a rise in unemployment. AI tools are manmade and imperfect. It is unsurprising that errors will inevitably occur. However, some mistakes in AI systems can lead to poor patient experiences, loss of money, and loss of many lives. Privacy concerns are some of the most pressing ethical issues of the digital age (Crawford, 2013). Many people believe that AI systems treat human beings as lab rats to be used for experimental research and profit gain. AI also threatens personal freedom and autonomy as individuals no longer have control over how their data is tracked, analyzed, and used by corporations and businesses. The most notable disadvantage of AI systems is the rise in unemployment levels. Robotic surgeries will replace human medical staff members. The administrative workforce, technical staff members, and some clinical staff members will be replaced by AI technology, and this will result in job losses and a revolutionary change in the medical profession. Therefore, it is important to evaluate the consequences of utilizing AI systems (Patel, 2020).

While many people cannot deny the benefits of AI-integrated systems in healthcare settings, some people may be hesitant to accept the technological shift of AI in our society. The risks outweigh the benefits. In the long term, AI tools will replace medical and healthcare personnel. As someone pursuing a career in the healthcare profession, this would negatively impact my career prospects. Millions of people will be laid off and will have to resort to low-paying jobs to make a living. Many professions in the healthcare industry will cease to exist (healthcare administrative and managerial staff, physicians, nurses, etc.). Additionally, human beings will lose authentic communication with one another. If machines take over the administrative and clinical aspects of healthcare (greeting exchanges, conversations with medical personnel, relationship building with providers, etc.), there will be less communication and understanding among human beings. In the healthcare field, it is critical to maintain lasting relationships of trust and compatibility between patients and providers.

Ethical issues will arise in response to the irresponsible use of technology. The healthcare industry should never turn into a profit-maximizing business. All people deserve the right to equitable health services. Many mobile health apps seek to gain profit by making educational content on health and setting membership fees and expensive plans. For example, Flo is a woman's health app that provides valuable information about issues pertaining to women (cancers, PCOS, pap smears, etc.) through virtual health assistants, built-in trackers, and educational content in the form of blogs. However, Flo has a premium feature that requires people to buy a monthly or yearly plan to access more resources. The educational content on health information should always be accessible and cost-effective. The use of AI systems in healthcare may create industries that will value money over population health. Mobile health apps such as Flo and other social media apps are also under

investigation and constant scrutiny by government officials. Accusations have been made against social media apps such as Facebook for spreading lies about vaccinations, global warming, and climate change. This will inevitably result in legislative actions which will restrict the use of technology in society. While AI technology provides valuable opportunities for human growth and success, it will also be the last human-made invention.

Conclusion

AI is one of the most innovative and distinctive products of this new digital revolution. Once, it was a futuristic fantasy, but now it is a social reality of this century, taking over all aspects of human socialization. AI has its advantages in helping society from the medical field, corporate jobs, and virtual assistants. All of which will help facilitate our everyday lives. However, AI also has its disadvantages that will not end up being good for society. Those disadvantages include technical errors and accidents, privacy concerns, harmful bias, and a possible rise in unemployment, among others. As a society, we cannot depend on AI because it is a manmade product. Anything made by a human is not perfect, which leads to uncertainties, and as a society, what would happen if we depended our lives on uncertainties?

The use of AI in healthcare has the potential to revolutionize the industry and improve patient outcomes. However, it also presents significant challenges and risks that must be addressed. On the one hand, AI has the ability to analyze large amounts of data quickly and accurately, identify patterns that might not be obvious to human clinicians, and even assist with medical decision-making. On the other hand, there are concerns about the accuracy and bias of AI algorithms, the potential for job displacement and income inequality, and ethical issues related to privacy and patient autonomy. Ultimately, the benefits and drawbacks of AI in healthcare will depend on how it is implemented and regulated. With the proper oversight, AI has the potential to improve healthcare outcomes for patients and providers alike. However, without careful consideration of its limitations and risks, it could ultimately do more harm than good.

Submitted: January 31, 2023 EDT, Accepted: April 30, 2023 EDT



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