Artificial Intelligence in The Healthcare Industry

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Introduction to Research Area

Artificial Intelligence (AI) defined by a branch of computer science that makes it possible for machines to learn and adjust to new inputs controlled by a computer to do tasks that are performed by humans because they require human intelligence and discernment. Artificial intelligence was discovered as an academic discipline in 1956 (Wikipedia).

It went through multiple cycles of optimism followed by disappointment. However, after 2012 was a huge increase in funding and interest (Wikipedia).

In 2022, global artificial intelligence was valued at US $136.55 billion. AI anticipated to become a US $1.3 trillion market by 2032 (AI for Business).

My goal and objectives from this research paper, is to illustrate the benefits behind using AI in the medical industry. Also, I would like to investigate and show how AI is included in many facets of the medical field work and responsibilities.

In addition, need to demonstrate its current application, security, concerns, ethical implication, and potential in the future. In my research paper, I will focus only on advantages from AI in healthcare industry.

Current Use of Artificial Intelligence in Medicine

There are number of benefits behind using Artificial Intelligence in medical field and healthcare departments. First, analyzing patient's data and quickly identifying patterns. Second, helping doctors make more accurate diagnoses. Third, develop personalized treatment plans for patients. For example, Robots that can assist with surgeries and other medical procedures. Finally, can improve a patient's outcome by reducing the risk of complications and speeding up recovery times. Furthermore, patients can access their charts or medical records anytime and anywhere. Let's talk about the overview of Artificial Intelligence in breast cancer medical imaging. I chose to talk about breast cancer because it has the second highest mortality rate by 2020 (Zheng, Dan, 2023). Breast cancer has decreased in its toxicity and become a malignant tumor with a better prognosis and treatment shifted to treat it as a chronic disease. (Zheng, Dan, 2023).

This improvement happened because of the huge by AI in medical diagnosis. There are many AI equipment that are used to diagnose breast cancer that become the key management of the disease. For example, Mammography, Ultrasound, Magnetic Resonance Imaging (MRI), and Position Emission Tomography (PET) (Zheng, Dan, 2023).

Security Aspects

Due to the vast amount of delicate patient data, the receiving and handling system must have rigorous data privacy measures. There are security concerns with the usage of AI in the healthcare industry. The safety of patient's data and the security of healthcare systems against cyberattacks play a significant role in healthcare data, privacy and security. Department of health and human services (HHS) and the numerous offices and agencies house and play different responsibilities in the healthcare industry, including several cybersecurity (McKeon, J. 2021, December 1). Leaders from office for civil right (OCR), the Administration for Strategic Preparedness and Response (ASPR) and the 405(d) program joined a panel at the most recent Healthcare Information and Management Systems (HIMSS) Healthcare cybersecurity (McKeon, J. 2021, December 1).

Due to the interconnection of the healthcare infrastructure, strong cybersecurity protocols are also necessary to avoid hacking and data breaches.

Legal Concerns

According to the abstract, the authors emphasized what researchers discovered that there is not an exhaustive evaluation of their research that shows any kind of legal issues that associated to AI- related health problems.

That explains why applying scoping methods can seek to integrate and analyze the existing research studying legal issues in health-related artificial intelligence (Silva, M.D. 2022, June 17). The scoping review developed by Arksey, O'Malley, and includes six stages (Silva, M.D. 2022, June 17). The first stage is identifying the research questions. The second stage is identifying relevant studies. The third stage is study selection. The fourth study is charting the data. The fifth stage is collecting, summarizing, and reporting results. The sixth and the last stage is stakeholder consultation (Silva, M.D. 2022, June 17).

Ethical and Social Implications

The Ethics of Artificial intelligence is the part of AI systems that divided into a concern with the moral behavior of humans, when they make, use AI at one hand and a concern of the machine that receives all this information and applied back to human at the other hand (Müller, V. C. (2020, April 30).

The use of AI- based telemedicine for public health can create new opportunities for the provision of clinical health and even can be a significant help to global public health system, but it also carries ethical risks that should be identified, avoided, or mitigated (Tiribelli, Simona, 2023). The design of AI-based telemedicine for its acceptance in and for public health, has not

yet been addressed by AI ethics framework, despite the current proliferation of these frameworks (Tiribelli, Simona, 2023).

One of the most important uses of AI in healthcare after taking the agreement, is Telemedicine or Telehealth. This kind of AI helped us especially during Covid-19 Pandemic, when doctors and patients could not physically appear at their medical appointments to receive their medical screening, diagnostic, and treatment.

Robotic-Enhanced Therapy

Digital technologies like robots have a big impact on how mankind develops. They have brought up necessary issues regarding what we should do with, what risk they pose, and lastly what we must do to manage those risks (Müller, V. C. 2020, April 30).

People with autism have trouble interacting and communicating with others. Here comes the huge help of the social robots for people with autism and ASD by enhancing their social abilities, teaching constructive actions, and offering encouraging feedback. This type of therapy is called Robotic-Enhanced Therapy (Quinn, Angela, 2023). Furthermore, Robotic-Enhanced Therapy is used for patients with mental and speech problems, such as dementia and Alzheimer's diseases. Also, people after stroke, or any other disease that affect their speech and communicating with others. In order to better understand the concept of mind capacities for social robots and any possible ethical problems that could come up while applying social robots in healthcare environments, we must admit that social robots in medical treatment for autistic patients is useful and successful. At the same time, we should not ignore the fact that human touch is very important besides advanced technology tools.

Social Problems

Legislation and other kinds of law that control the society of humans, when functioning mainly in the field of education improvement in artificial intelligence, have largely been undisturbed of legal problems (Vellido, A. 2019, February). Shortly, this technology starts taking over in the wider social venue. However, influencing to start dominating the wider social stadium, their impact on people will probably run against several legal difficulties (Vellido, A. 2019, February). Legal responsibilities are extremely different, when a human is deciding whatever choices when driving a machine (Vellido, A. 2019, February). Some doctors start blindly embracing artificial intelligence in their medical diagnosis and assuming that every prediction was reliable and forgetting to verify them and bring different possibilities under consideration.

Future Use

The healthcare organization that can completely rethink and redesign their workflows and procedures and apply machines learning and AI to build a truly intelligent health. System will be the most successful. Another innovation relating to the location of such care has been made in conjunction with predictive care, in 2030, a hospital is no longer a single large structure that treats a wide range of illnesses; rather it concentrates care on the critically ill and highly complex procedures with less urgent cases being monitored and treated via smaller hubs and spokes, including retail clinics, same day surgery centers, specialist treatment clinics, and even people's homes (*Kriwet, Carla. 2020, January 7).* Personalized treatment that considers patient's genetic makeup and medical history will become more and more feasible as a result of Artificial intelligence ability to manage big datasets. Considering the continued development of technological advance, AI is anticipated to hold an exciting future and become increasingly popular. It will likely affect a variety of fields, like financial services, healthcare, and transportation. The job marketplace is going to shift an outcome to AI-driven technology.

Conclusion

Artificial Intelligence improves cooperation in the medical sector with many different kinds. AI can investigate medical records and help physicians and nurses to evaluate a patient's condition and personalized treatments regardless of whether patients are visiting medical facilities in person or remotely.

The arrival of modern, advanced, as well as sophisticated artificial intelligence tools has come a long way by means of perception, comprehension, efficiency of delivering care, monitoring for arising complications, quick and reliable diagnosis of illnesses, and adoption of the most recent interventional methods. Ai can improve care for millions of patients around the World. Improve access to healthcare by providing accurate decision making and better understanding of human health. The assessment of outcome and achievement for a variety of malignancies is helped with these traits that can be obtained from scans, using algorithmic methods. Such characteristics have all been demonstrated to be useful and clinically applicable.

With the help of data and computers that comprehend our new World, artificial intelligence has the key to a fantastic future in which we will make a better decision.

The technology of future generations will be able not just to understand lights, for example, need to be turned on, but also; the way they will turn it on.

Annotated Bibliography

1.Wikipedia Foundation. (2023, September 15). Artificial Intelligence. Wikipedia.
https://en.wikipedia.org/wiki/Artificial_intelligence Retrieved on: 09/15/2023.

Wikipedia is an excellent resource that combines number of general instructions guidelines.

that build up the main points of my topic and highlighted the connection between information,

technology (Artificial intelligence) and the healthcare system. Wikipedia assist me to analyze the

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2.AI for Business: Berkeley Exec Ed Online Program. AI for Business | Berkeley Exec Ed
        Online Program. (n.d.). https://em-executive.berkeley.edu/artificial-intelligence-business-
        strategies?utm_source=bing&utm_medium=c&utm_term=artificial+intelligence+training
        &utm_location=91048&utm_campaign=B-
        365D_US_BG_SE_BAI_Generic&utm_content=Course&msclkid=5a18d9741596162aeee
        8bc70f99df5bb Retrieved on: 09/12/2023.

Artificial intelligence for business is anticipated because of the unexpected ways in which.

AI is transforming conventional business paradigms, offering predictive insights, and optimizing.

supply chain management (AI for Business, Berkeley).

3.Tiribelli, Simona,Ph.D., Monnot, Annabelle, MSc, Shah, Syed F H, BA, MB, BChir,
Arora, Anmol, MB, BChir, Toong, Ping J, American Journal of Public Health, Washington.
(May, 2023). "Ethics principles for artificial intelligence–based telemedicine for Public
Health." *American Journal of Public Health*, vol. 113, no. 5, 2023, pp. 577–

584, https://www.proquest.com/pqrl/docview/2802096756/226E56ED5E4A4648PQ/1?accountid=14541 Retrieved on: 09/15/2023

Picking up Telemedicine helped me to compare everything happened in front of me

especially during tough times, such as Pandemic (Covid- 19) and now, were universal medical.

condition become better and safer. Telemedicine helped me a lot during that time. Because I was

not apple to take my parents to their doctors' appointments in person. However, they had not

miss their medical appointments and further diagnostic and treatments using telemedicine.

4. Zheng, Dan, He, Xiujing, Jing, Jing, Journal of Clinical Medicine. (2023). "Overview of Artificial Intelligence in Breast Cancer"
https://doi.org/10.3390/jcm12020419. https://www.proquest.com/pqrl/docview/2767222113/60A791CE4A3641C2PQ/3?accountid=14541 Retrieved on: 09/15/2023.

I added this important article to my research paper to evaluate the fantastic performance of

Artificial intelligence in medical diagnosis and how can safe life and improve care for

many patients. Cancer diagnosis is very complicated both for doctors and patients. With

AI doctors can identify the place and size of the cancer and give an accurate diagnosis,

while cancer is still in its early stages. Images such as Mammogram can illustrate if there is an

evidence or sign of breast cancer. The faster we discover it, the better prognose will be.

5. Quinn, Angela. (2023)" Expanding Autism Treatment Through Social Robotics: Prospective Solution in Clinical Therapy" , Pacific University ProQuest Dissertations Publishing https://www.proquest.com/pqdtglobal/docview/2774416541/6672B7C4C400428CPQ/2?accountid=14541 Retrieved on: 09/15/2023.
I believe that I need to mention how children with autism are struggling to communicate.

Because they cannot modify their behavior to meet the emotional and cognitive needs of other

people. Here comes the benefits of social robots to develop social appropriateness and emotion.

via storytelling, physical interaction, and visual communication.

The purpose of this abstract is to dive into the study's findings to determine if social robots in

Medical treatment for autistic people is important. Despite describing, why autism affects the

functioning of the brain and the beneficial effects that are associated with social robots.

6. Müller, V. C. (2020, April 30). *Ethics of Artificial Intelligence and Robotics*. Stanford
    Encyclopedia of Philosophy. https://plato.stanford.edu/entries/ethics-ai/

Retrieved on: 09/13/2023.

The ethics of AI and robots have witnessed an increasing amount nowadays. Stimulation

further studies and proceeds the possibility of weakening the field as the media coverage,

regularly focusing on the issues and concerning about what future generations is going to

Bring us. However, we should all understand before coming up with any new idea and ask

an important question, what is the best for humanity and the better way to accomplish it.

7. McKeon, J. (2021, December 1). *Security, privacy risks of artificial intelligence in
    Healthcare*. HealthITSecurity. https://healthitsecurity.com/features/security-privacy-risks-
    of-artificial-intelligence-in-healthcare Retrieved on: 09/12/2023.

Artificial intelligence in healthcare industry can be particularly beneficial for the healthcare

settings in a many different types. Nevertheless, there are plenty of concerns regarding the way

we influence artificial intelligence. Even though, the potential benefits of using AI might

strongly exceed its safety and privacy dangers, medical facilities should always consider and

address these risks in developing cybersecurity policies and ensuring HIPAA privacy

conformance.

8. *Kriwet, Carla. (2020, January 7) Here are 3 ways AI will change healthcare by 2030*. World
      Economic Forum. (n.d.). https://www.weforum.org/agenda/2020/01/future-of-artificial-
      intelligence-healthcare- delivery/ Retrieved on: 09/13/2023.

The article shows that by 2030, Artificial intelligence is going to use an assortment of data

sources in order to detect patterns of disease and boost medical treatment and care. Healthcare

industry is going to be enabled to predict a person's susceptibility towards illnesses and

offer preventative services. AI is going to help with decreasing wait time for patients and

improving hospitals as well as healthcare system productivity.

9. Vellido, A. (2019, February). *Societal issues concerning the application of Artificial
      Intelligence in medicine*. Kidney diseases (Basel, Switzerland).
      https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6388581/ Retrieved on: 09/13/2023.

Despite standard statistical techniques, AI generates lots of attention in the study of medical

information since healthcare grows toward an academic discipline, which is progressively data.

driven (Vellido, A. (2019, February). Nowadays, I see that a lot of physicians are totally relying

on artificial intelligence almost in every single medical decision and this could really impact

patients' health. Moreover, can cause anxiety, stress, and even unexpected serious medical

diagnostic and treatment errors.

10. Silva, M. D., Horsley, T., Singh, D., Silva, E. D., Ly, V., Thomas, B., Daniel, R. C., Chagal-
      Feferkorn, K. A., Iantomasi, S., White, K., Kent, A., & Flood, C. M. (2022, June 17).
      *Legal concerns in health-related Artificial Intelligence: A scoping review protocol -
      systematic reviews*. BioMed Central.
      https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-022-01939-y

Retrieved on 09/13/2023

In this abstract, after the depth study, researchers (Arksey, O'Malley) came up with conclusion

that shows no legal issues associated with AI- related health consequences. Adopting scoping

review approach, they desire to summarize and describe the literature investigating legal

problems in health- related issues occur after applying artificial intelligence.