Artificial Intelligence in Healthcare and Medicine: Promises, Ethical Challenges and Governance

Introduction:

Artificial Intelligence **is the force that reinforce industries and it has a big role in society including medicine. it was invented in 1955 by john McCarthy and is defined as "the science and engineering of making intelligent machines ".**

The concept of AI means that use machines and computers to model intelligent behavior with A little human intervention .it has appeared with the invention of robots and the art of Da Vinci's about robots help to establish the way for this invention and is considered an inspiration to many researchers in the robot. Over the last decade, AI has been applied to different areas such as search engines, machine translation systems, and intelligent personal assistants.

In 2014, IBM announced a "TrueNorth" chip which consider industrial revolution in AI filed because it has ability to give machines and computer some of the Human brain-like abilities. governments worldwide made plans and designed strategies pertaining to AI application. The NG-AI Plan is the best national AI strategies, with not only goals for research and development and industrialization, but also standard setting and ethical norms, and security.

APPLICATION OF AI:

In general, Ai in healthcare and medicine can be divide into three main branches virtual, physical and combination between virtual reality and robots.

1) physical branch:

It can represent by robots which are used to help patients and assist doctors like Surgical robots, Robotmoxi, The Xenex Germ-Zapping Robot.

Surgical robots like A surgical system made by the American company Intuitive Surgical was named Da Vinci in recognition of his inspirational impact on this field

2)virtual branch:

Virtual AI via machine learning is a subset of AI and refers to a set of methods that can detect patterns in data automatically like Virtual Nursing Assistants

Ethics OF AI Usage:

The purpose of ethical governance is to instill good practices and avoid negative impacts on participants. In addition, that, Researchers promised using AI in medical field to cure diseases such as Par-Kinson's disease, diabetes, spinal cord

injury, and cancer as AI is double-edged weapon that can help people and harm them as well.

Ethical challenges of AI application in healthcare and medicine:

it is important to find the balance among three relationships:

1)science - Medical indication.

2) human society - Safety and priority of life.

3) individuals - Patient desire.

These three terms cover all sides of the good usage of these apps on the patients.

Ethics pertaining to AI in medicine have been elaborated in *Bioethics of Clinical Applications.*

There are some ethical issues facing the clinical application of AI which must be handled safety, efficiency, privacy, informed consent, the right to decide to get satisfaction of patient.

Big data are indispensable to AI research in healthcare. Moreover, research and development

involving AI in medicine is currently inseparable from

animal experiments as researches on certain biological interventions, such as gene editing and stem cell therapy, is

currently permitted in somatic cells, it is prohibited in

human embryos or germ cells.

Similar to big data, deep learning is arguably the core of both biological and artificial intelligence.

Clinical staff must be careful on patient's life as technical errors associated with such technologies may cause problems

and don't take risks as successes in areas beyond control could

result in even more serious issues.

Based on current knowledge and experience, we are all excited about how developments in molecular biology will be in the new era. But unfortunately, scientists cannot predict the impact of deep learning in AI on the environment, humanity's future and biohybrid systems specifically.

biohybrid systems refer to the integration of AI with biological

systems, have been capturing the interest of various scientific communities.

One of the fields that may be affected by AI is *"Neurobion Hybridization"* which refers to interfacing brain-inspired devices with the real human brain. as BCI technology -for example- when using a reader on a patient's scalp to help people with spinal-cord injuries, which could lead to a brain infection and subsequent damage to the brain

However, BCI is a "direct connection between living neural tissue and artificial devices"

Principles give priority to the individual's interests; no one can sacrifice the individual's rights and interests even for the sake of human society as a whole. Another important ethical consideration is ensuring fairness among individuals once AI applications are allowed into clinical practice. In such cases, the professional will be required to act in the best interests of his patient, according to the four requirements under Jonsen's framework of general ethical issues Moreover, each individual should have an equal opportunity to enjoy the benefits provided by AI in medicine.

Pros and cons:

This paper is so good at ethical challenges but its language was not good enough as it was translated before.

It showed the advantage of AI well.

It does not cover general ethics in medicine well.

Its order was so bad as I was made to arrange it from scratch to summarize it well.

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