What is Artificial Intelligence, and how is it Beneficial for the Healthcare Industry

Artificial intelligence (AI) is the branch of computer sciences that emphasises the development of intelligent machines, thinking and working like humans, for example in speech recognition, problem-solving, learning and planning.

Today, artificial intelligence is a very popular subject that is widely discussed in technology and business circles. Many experts and industry analysts say that AI or machine learning is the future – but if we look around, we are convinced that it's not the future – it is the present.

With the advancement in technology, we are already connected to AI in one way or the other – whether it is by Siri, Watson or Alexa.

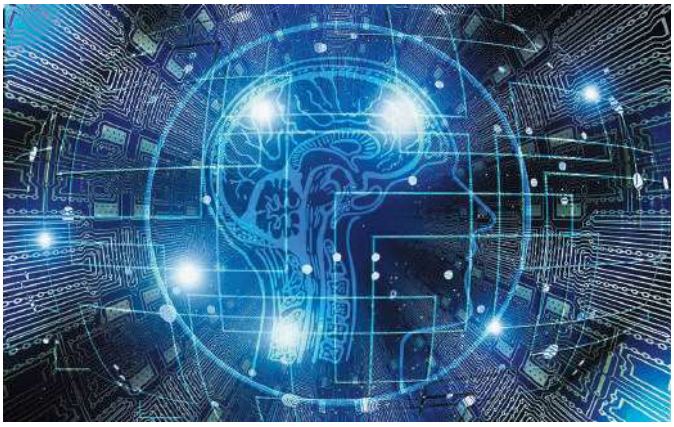
However, when we look at AI's role in healthcare, it is still a relatively new technology, where adoption remains in its infancy. From hospital care to clinical research, drug development and insurance, AI applications are revolutionising how the health sector works to reduce spending and improve patient outcomes.

Artificial Intelligence in Healthcare

The healthcare industry is ripe for some major changes. From chronic diseases and cancer to radiology and risk assessment, there are nearly infinite opportunities to leverage technology to deploy more precise, efficient, and impactful interventions at the right moment in a patient's care.

Population growth, ageing societies, and changing disease patterns are expected to drive greater demand for well-trained health workers in the next 15 years. The global economy is projected to create around 40 million new health sector jobs by 2030, mostly in middle- and high-income countries. But despite the anticipated growth, there will be a projected shortage of 18 million health workers needed to achieve the UN Sustainable Development Goals (SDGs) in low- and lower-middle-income countries, fuelled in part by labour mobility, both within and between nations.[1]

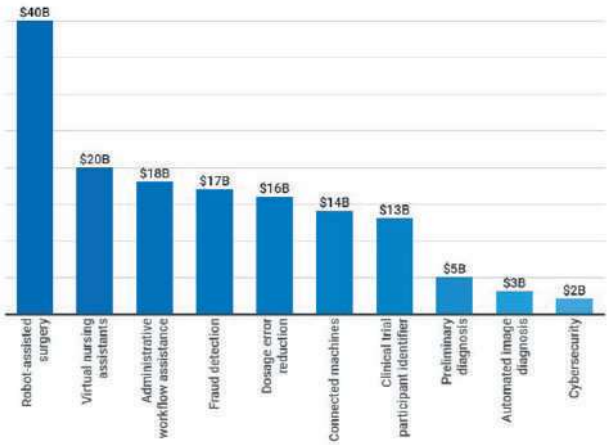
As payment structures evolve, patients demand more from their providers, and the volume of available data continues to increase at a staggering rate, artificial intelligence is poised to be the engine that drives improvements across the care continuum.



The use of AI in the healthcare market is growing due to the continued demand for wearable technology, digital medicine, and the industry's overall transformation into the modern, digital age.

Hospitals and healthcare professionals are seeing the benefits of using AI in technology and storing patients' data on private clouds, like the Google Cloud Platform. AI allows doctors and patients to more easily access health records and assess a patient's health data that is recorded over a period of time via AI-infused technology.

Here are some of the areas where AI is already starting to transform healthcare, and others where experts expect it to revolutionise the sector in coming years.



Applying artificial intelligence has three basic dimensions: productivity aspects or transforming care delivery by optimising workflows and enlarging precision medicine by decreasing unwarranted variations and developing diagnostic accuracy.

There are several ways artificial intelligence will revolutionise the delivery and science of healthcare.

Combining Mind and Machine through Brain-computer Interfaces

Computers in today's day and age are used as a medium for communication, however using this medium to create a direct interface between the human mind and technology without the monitor and keyboard is a cutting-edge area of research that has significant applications for some patients.

Neurological diseases and trauma to the nervous system can take away some patients' abilities to speak, move, and interact meaningfully with people and their environments. Brain-computer interfaces (BCIs) backed by artificial intelligence could restore those fundamental experiences to those who feared them lost forever.[3]

Developing the Next Generation of Radiology Tools

For non-invasive visibility into the inner workings of the human body, radiological images obtained by MRI machines, CT scanners, and x-rays work. However, for many diagnostic processes, physical tissue samples are still obtained through biopsies, which carry risks with the potential for infection. For this, artificial intelligence will enable the next generation of radiology tools that are accurate and detailed to replace this need for tissue samples in some cases.

Artificial intelligence is helping to enable "virtual biopsies" and advance the innovative field of radiomics, which focuses on harnessing image-based algorithms to characterise the phenotypes and genetic properties of tumours.

Expanding Access to Care in Underserved or Developing Regions
Shortages of trained healthcare providers, including ultrasound technicians and radiologists, can significantly limit access to life-saving care in developing nations around the world – currently 154 nations.

Because of artificial intelligence, several tasks can be taken over that are typically allocated to humans. For example, AI imaging tools can screen chest x-rays for signs of tuberculosis, often achieving a level of accuracy comparable to humans. This capability could be deployed through an application available to providers in low-resource areas, reducing the need for a trained diagnostic radiologist on site.

Reducing the Burdens of Electronic Health Record Use
Electronic health records have played an instrumental role in the healthcare industry's journey towards digitalisation, but the switch has brought numerous problems associated with cognitive overload, endless paperwork, and user burnout.

Electronic health records developers are now using artificial intelligence to create more natural interfaces and automate some of the routine processes that consume so much of a user's time. Voice recognition and dictation are helping to improve the clinical documentation process. Artificial intelligence can also help to process routine requests from the inbox, like medication refills and result notifications.

Bringing Intelligence to Medical Devices and Machines
Smart devices are taking over the consumer environment. In the medical environment, smart devices are crucial for observing patients in the ICU and elsewhere. Using artificial intelligence to improve the ability to identify deterioration or understand the development of complications can significantly improve outcomes and can also possibly reduce costs that will be related to hospital-acquired conditions.

Examining Health through Wearables and Personal Devices
From smartphones with step trackers to wearables that can track a heartbeat around the clock, a growing proportion of health-related data is generated on the go. Collecting and analysing this data – and supplementing it with patient-provided information through apps and other home monitoring devices – can offer a unique perspective into individual and population health. Artificial intelligence will play a significant role in extracting actionable insights from this large and varied treasure of data.

Artificial Intelligence for Healthcare in UAE
AI will have a significant impact on the economy of UAE as it continues to show indications of audacious shifts in the rule of law to make innovation and investment in artificial intelligence. Given the rate at which AI technology is growing and the region's overwhelmingly young and tech-savvy population, it is certain that the significant economic benefits that will be reaped from AI will far outweigh any societal concerns. The emerging government focus on AI, combined with its size, creates a strong potential for the country to become an AI leader in the region by attracting the right investment. The country's existing research and development infrastructure is combined with ease of doing business. And with the overall readiness of consumers to adopt AI, this allows it to attract considerable investment in AI-based technologies. The resulting push towards AI the government is able to attract implies that the short-term gains from AI are potentially larger in the UAE as compared to the rest of the region.

In 2019, the UAE Cabinet officially approved an ambitious strategy that aims to help place the country at the forefront of global efforts to develop artificial intelligence. The plan is comprised of eight objectives, including reaffirming the UAE's position as a global artificial intelligence (AI) hub, employing AI in customer services and recruiting and training people to work in fields which will be driven by the technology for years to come.

This strategy is the first of its kind in the world and covers the development and application of advanced technologies in nine sectors including transport, health, space, renewable energy, water, technology, education, environment, and traffic.

The UAE healthcare market is expected to grow 12.7%, to nearly US$20BN (AED 71.56BN) by 2020. The UAE leads the top 20 countries in the world with US$1200 per capita spend on healthcare (AED 4400), which is indicative of residents' trust in local medical establishments.[4]

In the healthcare sector, new technologies are being slowly introduced to test its effectiveness. For example, the Government of UAE is currently testing and introducing the following new innovations into healthcare:

- The body of health analysis pods to be rolled out in government buildings to assist the staff to monitor health and detect early any signs of illnesses.
- An application by Babylon, which uses AI to provide 24/7 video consultancy to patients from all around the world will be soon available in UAE.
- Health Care and Innovative New Technology (HINT) neuro band helps detect strokes; and
- The flow cell sensors by Admetsys to alert doctors to sudden drops in the vitals of ICU patients.[5]

With all these advancements across UAE and around the world, these are some of the great things that AI can do. But it is not limited to that. As innovation pushes the boundaries of healthcare, better solutions to save time, money, and inefficiency will be possible.

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