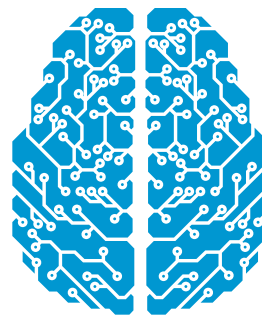# The Power of Artificial Intelligence in Healthcare

At Omnicom Health Group, we believe that artificial intelligence and cognitive computing are transforming healthcare. We would like to know what you think. Send us your feedback at technology@omnicomhealthgroup.com

Cognitive Computing and Artificial Intelligence (AI): What Are They?

Artificial Intelligence is defined a "the use of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages." Although AI simulates human decision-making, it does not replace human intelligence; rather, it relies on human training!

Unlike other types of technology, AI understands natural language. Natural language is written-out text, rather than structured data such as dates, numbers, and facts that computers normally handle. By understanding natural language and generating hypotheses based on evidence and learning as it goes, AI technology can be trained to make more logical decisions.

Artificial Intelligence is a rapidly advancing technology in healthcare. By providing rich and relevant information to patients and HCPs with on-demand medical and clinical confidence, AI can greatly advance healthcare professional (HCP) and patient communications. Artificial intelligence is available today for HCP and patient use, and can even be tailored to personality profiles to support patients beyond disease.

Interest and investment in artificial intelligence continues to grow. Apple's Siri, Amazon's Echo, and Google's OK Google are just a few examples of mainstream commercial AI. In 2015 alone, $8.5 billion was spent on AI companies. It was also one of the fastest growing industries in healthcare last year.

The potential power of this technology in healthcare is enormous. IBM Watson Health is pushing the envelope with artificial intelligence and has established itself as the front-runner in AI and cognitive computing in healthcare by establishing partnerships with leading pharmaceutical companies such as Teva and Novo Nordisk, and healthcare companies such as CVS Health. Google DeepMind is not far behind as well as some other leading companies such as Dell, Apple, Luminoso, and Next IT.

September 2016

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A misconception about artificial intelligence is that it's too far out of reach for pharmaceutical companies, when in reality, it is accessible and can bring great value. For example, IBM Watson is not a supercomputer that is incredibly complicated and cumbersome to use. It's just 32 preprogrammed modules that can be used as building blocks to apply AI to valuable data in the healthcare ecosystem and generate new insights.

It's predicted that by 2020, there will be 44,000,000,000,000 GB of digital data. That is 44 zettabytes! Artificial intelligence will be the key to analyzing this data to benefit healthcare because most of this data is in the form of unstructured or natural language information.

Eighty percent of the data we generate today is unstructured. These data points include texts, emails, Facebook posts, tweets, health records, clinical trial information, patient support program data, and much more. Artificial intelligence is the perfect solution to help us analyze the unstructured data that most humans produce and will lead to true insights in the healthcare space.

Examples in Healthcare

There are already examples of how AI is being applied successfully in healthcare.

UPMC partnered with IBM Watson to undertake the challenge of improving supply chain performance within its healthcare system. UPMC is one of the nation's largest integrated healthcare delivery and finance systems with more than $12 billion in revenue. IBM Watson's medical procurement expertise and UPMC's domain expertise resulted in the formation of a new independent company called Pensiamo with the mission to improve supply-chain performance for healthcare systems.

Another advancement in healthcare through the use of AI is the ability to mine information that's held within medical records. Google DeepMind, for example, is working with Moorfields Eye Hospital in east London and the UK's National Health Service (NHS) by mining health records to bring better and faster health services. The goal is to "eventually be able to recognize sight-threatening conditions from just a digital scan of the eye."

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Artificial intelligence is well known for advancing precision medicine and more recently, genomic analytics. In Japan, doctors used IBM Watson to diagnose a patient with a rare form of leukemia. Use of AI allowed them to diagnose the oncology patient and identify a lifesaving therapy much faster than if they had used traditional methods by manually examining the patient's genetic data. The researchers had to supply genetic data from the patient and then Watson crosschecked it with a database of previous patients. Watson was then able to detect gene mutations that are unique to a particular type of leukemia.

Craig Venter, who is considered a father of the Human Genome Project, has started Human Longevity, Inc (HLI). The project is designed to spot cancer or vascular diseases early based on a complete genome sequencing and very detailed medical check-up of the patient. Artificial intelligence helps the HLI team identify patterns in huge data sets of genetic information and medical records.

As is common with technologic advances, AI is replacing jobs that previously required humans with computers. It is being applied to repetitive types of jobs or actions in healthcare. For example, AI is being used to help clinical decisions in radiology and cardiology. Image recognition and speech recognition technologies have advanced these forms of AI.

Artificial intelligence is also helping to speed up telemedicine. It is able to improve online consultations by recognizing patient history and symptoms more quickly, and recommending the best course of action. A great example of this is the Babylon Health System, which is a British subscription service for telemedicine.

Artificial intelligence is being applied to drug creation. Atomwise is a company that is exploring how AI can be used for drug discovery. For example, the company is using AI to examine drugs that are already being used for other diseases and see if those drugs can reduce Ebola infectivity.

Conclusion

The power of AI in healthcare is undeniable. Although results of using AI are impressive, initial involvement with this type of computing does not need to be overwhelming. At Omnicom Health Group, we can help identify easy steps to using AI. If you'd like to learn more, please contact us at technology@omnicomhealthgroup.com.

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