Causes and consequences of the arrival of computers and artificial intelligence in the medical field

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ABSTRACT

Computers play a key role in almost every sphere of life. They facilitate the storage of large amounts of data, they allow a fast processing of the information, possess an integrated intelligence, which if it is completed by the human intellect, can do wonders. Because of their intelligence and speed, computers operate on a level close to that of the human brain. Computers can therefore be used in various fields such as engineering, data processing and storage, planning and programming, education and medicine.

INTRODUCTION

Importance of computers in medicine:

Here are the different uses of computers, before examining the importance of computers in medicine.

Computers are great ways to store patient data. Hospitals use computer systems to maintain patient records. It is often necessary to keep detailed records of patients' medical histories. Physicians often need information on the patient's family history, previously diagnosed illnesses and prescribed medications. This information can be stored in a computer database. Computers can track prescriptions and billing information as well as be used to store information about prescribed drugs to a patient. Computers allow massive and efficient storage of large amounts of medical data.

Computer software is used to diagnose diseases. They can be used for the examination of the internal organs of the body. Even some of the complex surgeries can be performed with the help of computers. Computer Assisted Surgery (CAS) is a field in the midst of medical advancement, which combines medical expertise with artificial intelligence to quickly deliver more accurate results in surgical procedures. In CAS, a model of the patient is created and analyzed before surgery. The surgical procedure is simulated on the virtual image of the patient. The surgery can then be performed by a surgical robot, as programmed by a health professional or the robot can not help the doctors while they are doing the surgery. In both cases, artificial intelligence is at work, highlighting the use of computers in medicine.

Long years of medical education may be unnecessary in the face of rapid advances in information technology, according to some health professionals.

A diabetic man makes an appointment with his doctor. After a short interview, the doctor takes a picture of his eye with his smartphone. A few seconds are enough to get a diagnosis: the man does not suffer from retinopathy, a disease that affects a majority of diabetics and can cause blindness if it is not treated. Behind this demonstration, there is the expertise of DreamUp Vision. This French company develops an artificial intelligence capable of detecting diseases of the eye using simple photographs. The machine gives an almost immediate diagnosis, comparing the patient's eyes to a bank of several thousand images.

Doctors are a little cautious about the approach of Internet giants like Google who seem to be trying to bypass them, to treat people with disruptive approaches and artificial intelligence techniques.

Artificial intelligence does not seek to replace the clinical expertise of a physician, although it may have been thought for a moment in the 1980s that expert systems would be able to diagnose and offer treatments on their own.

Google's and IBM's solutions do not reach a virgin territory: other players are already marketing software to help healthcare professionals give their patients the best possible treatment.

Decision support systems are used every day for interns who want to know, once the diagnosis is made, what is the best therapeutic strategy for their patient. This type of software, however, does not use artificial intelligence. It relies on databases of recommendations of "good practices" established by specialists and organizations such as the High Authority of Health (HAS) in France. But as noted in a 2011 report of this same HAS, even these medical decision support systems struggle to win in France. Only for the moment, the United States uses them very widely and, to a lesser extent, the countries of northern Europe and the United Kingdom.

On the other hand, doctors may not have worried about it, but the help of software has already become indispensable in the increasingly complex field of medical imaging. Systems such as MRIs or scanners now include image analysis software that can highlight important points and quantify specific parameters.

The question is not whether computer science will replace doctors, but to see how this can help improve the quality of their actions.