Artificial Intelligence (AI) and Technology

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The mid-1900 has bought the idea of Technology thinking for itself, invading the mainstream general public and establishing the concept of artificial intelligence (AI). It started developing to impact our lives. We understood that soon the creation of robots capable of taking over the job of humans may become the norm in the society in which we are taking part. Robots are destined to become more intelligent and certainly more adapted to perform work.

We have already observed the self-checkouts at the grocery stores with no cashiers and more and more the authorities are pushing us for buying electrical cars, able to be auto-driven. These changes have already created fear in a technology, capable of replacing humans. Artificial Intelligence Technology is becoming more advanced year after year taking over human jobs and using a knowledge superior to better deal with healthcare, or Industry etc.

Artificial Intelligence (AI) can advance life in every aspect from Medical Science to financial applications. Businesses across every industry are recruiting AI professionals to refine their development. At the University, now there are programs offering Machine Learning and Data Sciences, enabling one to tailor their learning toward their goals. They will gain experience in language processing, voice recognition, decision behaviors, machine learning etc. Other core programming languages and AI algorithms or methodologies will emerge in the field of AI.

The performance of our young physicians is certainly being tested through the AI language model when we think that it has already been officially used in the Medical Licensing Exam (USMILE) in the United States, via the Chat-GPT. in the all three sections of the test. It has exposed a new language model recently adopted only three months prior to the preparation of the examination without previous training or use of biomechanical data. It has also demonstrated an enormous potential for AI-assisted education with perhaps a possibility in providing more accurate AI response or AI diagnosis.

Chat-GPT is free and available as a software capable of writing sophisticated responses to any topic. By example, students can instruct their computer to compose a dissertation or resolve a mathematic problem and quickly, the task can be performed instantly, no matter how complicated is the subject. It can be used for mathematics or any other topics in an academic setting. The problem is that the system can be abused or the student can rely on it to perform his/her homework without putting the effort to learn. Other educators find positive arguments to incorporate Chat-GPT in the learning tools of any student willing to enhance learning.

Questioning (AI) could allow this tool to become better at diagnosing any pathology in the field of medicine for the human beings. This shows us an enormous potential for AI-assisted education and perhaps even the ability to provide more accurate AI diagnosis. However, it will also question the method in assuming that AI could be more efficient and more precise at diagnosing than a human professional healthcare specialist. Now some have asked to many in the medical community to consider using artificial Intelligence in their clinical decision making. Surprisingly more than half of the interviewed persons, answered positively while the remaining were split in their answers. A half of them responded categorically by a "no" and the remaining were unsure. It is without saying that many respondents already can see AI as part of the armamentarium of any treating healthcare specialist, expanding the choice of treatment.

It is not sure that people know yet how such tool can be used. Some believes that the software may facilitate a transition period but definitively, AI is not ready yet to satisfy the public in general. Will it be better than humans? It appears to be an important adjunct to the present system. Although Chat-GPT is definitively a language, already imitating humans but unable so far to make life/death decisions.

Researchers have recently programmed a nerve-stimulation device, controlled by artificial intelligence (AI) software to help three paralyzed patients who were unable to move their extremities. These devices were programmed individually to send electrical signals to specifically target and activate regions of the spinal cord, allowing patients to walk, cycle or swim again. Instructions were given to the electrodes on the device allowing it to emit signals and stimulate the nerve roots responsible for walking.

Three quadriplegic patients following spinal injury have benefited from this nerve-stimulation device after it was implanted in their spine, and controlled by a touch screen tablet. One patient sustained a nine years old injury leaving him with a high

thoracic spinal transection, just below the neck. He was able to take his first steps within hours after a team of neurosurgeons implanted prototypes of the nerve stimulation device controlled by artificial intelligence software. All three patients were victims of motor bike accidents and aged respectively 29-, 32- and 41-year-old.

The paper was published in the Journal Nature Medicine after the scientists Gregoire Courtine and Jocelyne Bloch of the Swiss Institute of Technology form Lausanne, led the study. They used a device-design manufactured and commercialized by a Netherlands-based technological company (Onward Medical). It seems that the implantation of the computerized device may benefit around hundred more patients primarily in the United States, soon. Unfortunately, there is no known medical or surgical treatment to-date that can be offered to a paraplegic or a quadriplegic, enabling their spinal cord to heal itself. This is why researchers have pursued this new venture to help paralyzed patient allowing them, to re-gain mobility through AI technology.

It is the hope that paraplegics and quadriplegics would be able to order through a smart phone or a smart watch, an activity like "walk" or "sit" and then send a signal to the implanted device to stimulate appropriate nerves and muscles response and initiate specific movements. The researchers are confident that such tasks can be offered to the paralyzed individuals. There have been other researchers who tried to stimulate walking by stimulating the nerves through the back of the spine using a broad electrical field emitted by implanted devices, originally designed to control chronic low back pain. The neurosurgeons mentioned above (Courtine and Bloch) and their team re-designed such devices allowing the electrical signals to enter the side instead of the back of the spine.

At the University Hospital of Lausanne in Switzerland, a 42-year-old paraplegic for one year, is presently hooked to a weight-supporting robot after he benefited from a spinal cord implant within the STIMO Bridge research. At Tel Aviv University, in Israel, a member of a research team claims to have developed and implanted in the injured spinal cord of a paralyzed mice, genetically engineered human cells that has helped the animal to walk again. This article was recently published in the journal "Advanced Science". It is believed that these cells worked like embryonic stem cells with the capability to de-differentiate and mimic the function of any other cell in the body.

In the beginning of the experience, it was noted that the injured spinal cords used in the research sponsored by Tel Aviv University, developed scar tissue, impending on

the ability of the stem cell to become functional. These embryonic cells were allowed, then, to mature into a small network of nerve cells and to flourish in a special tube environment, prior to be implanted. Scar tissue was also surgically debrided and removed prior to implantation. They reported an 80% rate of success at restoring sensation and motion to the extremities of the paralyzed mice. The team is expected to launch human trials within years. It is certainly a challenge.

At the Swiss institute, the scientists created a software especially tailored to each patient, based on artificial intelligence algorithms which instruct specific electrodes on the device to emit signals and stimulate in the proper sequence, the individual nerves that control the trunk or the leg muscles. The software is tailored to fit the patient anatomy. Once the device is implanted, the patient could initiate and activate movements with the extremities. One has also to remember that the longer you are paraplegic or quadriplegic, the more you will be losing your muscle bulk from disuse.

So, any new technology will have also to rely on the patient ability to re-gain various activities of their functioning muscles. It will represent for each patient a meticulous work to bulk up muscles and render them functional. The more they train, the more they will be able to perform. The three completely paralyzed patients described above, were able to walk, cycle and swim using the nerve-stimulation device controlled by a touchscreen tablet. The high thoracic paralyzed patients (one to nine years old injury) were also able to take their first steps, an hour after the neurosurgeon implanted the nerve-stimulation device, remotely controlled by artificial-intelligence software. Slowly over the next six months they re-gained the ability to perform in more advanced activities like walking, cycling and swimming while controlling the nerve-stimulation device themselves, and using the touchscreen tablet.

Further, if many have discovered Chat-GPT while surfacing the net, on Tik-Tok or in posting funny videos or even in telling jokes, it seems now that one wants to discuss scientific papers or more serious topics. It remains important that the collection of data assembled for such activities must be taken from different sources and must give the assurance that the collection of facts is accurate. Others may have discovered a certain bias in the analysis of the topics or simply a fabrication in the facts or the references. It is believed that many feel also evidence of bias in AI-written text, discussing of racism or politics etc. In brief, many may find doubtful some of the conclusions offered in different texts deal also with myths or memories more than truth.

Chat-GPT seems to help people learn on how to think while performing. They can communicate better by enlarging the potential of "Generative AI" to help students in their researches, by freeing up teacher's time. We may even feel a certain diversity when poorer students may struggle to access AI-technology because they need to pay money to benefit from the technology. Some schools are running a tight budget and even little money as (5 or 10 dollars) for the access, may represent too much for a subvention. Chat-GPT can become a powerful and revolutionary tool in education but it can be misused as well in pedagogy or can force students to become excited about learning. But, one will have to realize that it is not a substitute to the basic learning process.

Recently I read about a super-fast "Chat-GPT Plugin that automates Data Analysis, taking the data analysis to the next level. Its being called "Noteable" for all the Chat-GPT subscribers and can help you automate your data analysis in seconds. It needs to be installed in a click but if you do not like reading, you can also watch it on Youtube video. Then you tell Chat-GPT and Noteable the king of analysis you want to carry out. A simple example can extend to the FIFA Games of a World cup or analyze the players of different countries to allow you to evaluate the top most valuable players etc. The results show up in seconds.

Artificial Intelligence has the power to change the way we work, to improve our health and to modify our privacy. People can ask a voice-assistant, on the phone for a ride. Physicians can diagnose malignancies or spot genetic sequences to diseases and decide on more appropriate medications. It can supply notes of videos or photos relevant to the medical examination or simply replicate a voice. (AI) can provide facial recognition and provide surveillance or can become an intrusion on people's privacy. I was surprised to learn that while using the computer or the TV or the telephone, you are being observed.

(AI) is capable of anything from creating images to predicting patterns. You might think of controlling robots or self-driving cars or artificially creating images but it is also important to understand how the technology works. The concept has been around since the 1950's and was defined as a machine ability to perform a task that would have required man intelligence in the past but can be assigned to a machine or a computer. Some experts may define Intelligence as the ability to adapt, plan, solve program or improvise new situations. Nowadays, AI system may demonstrate traits of human experience and it is not a secret to see that we are trying to re-create it artificially.

(AI) comes under different forms available in everyday life. The smart speakers with Alexa or Google voice assistant are great examples of AI as well as the Chat-GPT, the Bing Chat or the Google Bard. When you ask Alexa or Chat-GPT a question, you get an answer that is the result of machine-learning algorithms. These systems are not a replacement for any human intelligence or any social interaction but the systems have to be trained in order to adapt or learn new skills for tasks they are explicitly programmed or instructed to perform. It looks like there are different subcategories of AI: the" Narrow AI", the "General AI" and the "Super AI". Let us define them better:

The Artificial Narrow Intelligence (ANI) is crucial for voice assistants such as Siri, Alexa, or Google Assistant, which are intelligent systems that have been designed or trained to carry out specific tasks in order to solve particular problems. This narrow intelligence is considered as a weak AI because it does not possess general intelligence. It can recognize images or technologies responding to simple customer service request or tools that flag inappropriate content online. Chat-GPT is an example of ANI which generate text responses.

The Artificial General AI (AGI) is a strong AI which involves a machine capable of understanding and performing task. This intelligence is more on the level of human intellect because it is able to reason and think as a human. It can thin abstractly and learned from its experiences. It is a system or a machine capable of common sense. The ultimate goal of AGI is the ability to develop its own consciousness.

The Artificial Super Intelligence (ASI) may sound straight out of a science fiction novel. This is a system where the intelligence of a machine surpasses all forms of human intelligence. It out-performs the human in every function. Remember well that an intelligent system which can learn and improve continuously itself remains a hypothetical concept, although ethically, it could lead to extraordinary progress in the fields of Medicine and Technology.

The biggest quality that sets AI aside from other computer science topics is the ability to easily automate tasks by employing machine learning which enabling computers to learn rather than being programmed. I can easily state that it appears for me that it is the hallmark of artificial intelligence. When a machine learns from large amounts of data, it can learn from its mistakes and recognize patterns dictating specific predictions and decisions.

I would not like to conclude without mentioning about conversational AI which includes systems that are programmed to have conversations when trained to listen (input) or train to respond (output) using natural language. So many companies have

invested in conversational AI like “Alphabet” (Google), Microsoft 365 (Copilot) etc. It comes to the success of a machine learning relying on the neural networks which represent a group of robots which work together to solve a puzzle while each one is programmed to recognize a different shape or color of the puzzle.

In conclusion, Artificial Intelligence (AI) is the way of the future. It will not fade out unfortunately but this new system will allow the replacement of many in the modern chain of labor. (AI) will certainly change the nature of the work-place, rendering it more efficient but once self-driving cars or trucks become more perfectioned, we may expect more than half of millions of drivers to lose their present position.

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