**Forum:** Education
**Issue:** Question of using Artificial Intelligence in classrooms
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## I- Introduction

Artificial intelligence is the ability of a computer-controlled, self-conscious robot to perform tasks mainly associated with human beings. Since the development of the digital computer in 1940, it has been shown that computers can be programmed to carry out complex tasks. For example, discovering proofs for mathematical theorems or playing chess. Despite computers are yet developed enough to comprehend human nature and everyday life. On the other hand, some programs have attained the performance levels of human experts in performing certain specific tasks,

The usage of in education has been a topic on board for over 3 years now. There are some who lean towards the traditional system and some lean towards improvement and change. People believe that these machines are not capable of understanding emotions so they're hesitant towards the introduction of them and introducing them to the child of their own. But some believe if we have students who have been taught nothing but the right thing for their whole academic career, our graduates will be more than capable of resolving problems in their everyday life.

## II- Definition of Key Terms

### Autonomous

Self-reliant; Autonomy means that an AI construct doesn't need help from people.

### Algorithm

These are math programming commands and formulas that inform a regular computer on how to solve problems with artificial intelligence. Algorithms are rules that teach computers how to figure things out on their own.

### Machine learning

Machine learning is the process by which an AI uses algorithms to perform artificial intelligence functions. It's the result of applying rules to create outcomes through an AI.

### Black box

When the rules are applied an AI does a lot of complex math. This math, often, can't even be understood by humans (and sometimes it just wouldn't be worth the time it would take for us to figure it all out) yet the system outputs useful information. When this happens it's called black box learning. The real work happens in such a way that we don't really care how the computer arrived at the decisions it's made, because we know what rules it used to get there. Black box learning is how we can ethically skip "showing our work" like we had to in high school algebra.

## Neural network

When we want an AI to get better at something we create a neural network. These networks are designed to be very similar to the human nervous system and brain. It uses stages of learning to give AI the ability to solve complex problems by breaking them down into levels of data. The first level of the network may only worry about a few pixels in an image file and check for similarities in other files. Once the initial stage is done, the neural network will pass its findings to the next level which will try to understand a few more pixels, and perhaps some metadata. This process continues at every level of a neural network.

## Deep learning

Deep learning is what happens when a neural network gets to work. As the layers process data the AI gains a basic understanding. You might be teaching your AI to understand cats, but once it learns what paws are that AI can apply that knowledge to a different task. Deep learning means that instead of understanding what something is, the AI begins to learn "why."

## Natural language processing

It takes an advanced neural network to parse human language. When an AI is trained to interpret human communication it's called natural language processing. This is useful for chat bots and translation services, but it's also represented at the cutting edge by AI assistants like Alexa and Siri.

## Reinforcement learning

AI is a lot more like humans than we might be comfortable believing. We learn in almost the exact same way. One method of teaching a machine, just like a person, is to use reinforcement learning. This involves giving the AI a goal that isn't defined with a specific metric, such as telling it to "improve efficiency" or "find solutions." Instead of finding one specific answer the AI will run scenarios and report results, which are then evaluated by humans and judged. The AI takes the feedback and adjusts the next scenario to achieve better results.

## Supervised learning

This is the very serious business of proving things. When you train an AI model using a supervised learning method you provide the machine with the correct answer ahead of time. Basically the AI knows the answer and it knows the question. This is the most common method of training because it yields the most data: it defines patterns between the question and answer. If you want to know why something happens, or how something happens, an AI can look at the data and determine connections using the supervised learning method.

## Unsupervised learning

In many ways the spookiest part of AI research is realizing that the machines are really capable of learning, and they're using layers upon layers of data and processing capability to do so. With unsupervised learning we don't give the AI an answer. Rather than finding patterns that are predefined like, "why people choose one brand over another," we simply feed a machine a bunch of data so that it can find whatever patterns it is able to.

## Transfer learning

Another way machines can learn is through transfer learning. Once an AI has successfully learned something, like how to determine if an image is a cat or not, it can continue to build on its knowledge even if you aren't asking it to learn anything about cats. You could take an AI that can determine if an image is a cat with 90-percent accuracy, hypothetically, and after it spent a week training on identifying shoes it could then return to its work on cats with a noticeable improvement in accuracy.

## Turing Test

If you're like most AI experts you're cautiously optimistic about the future and you have reservations about our safety as we draw closer to robots that are indistinguishable from people. Alan Turing shared your concerns. Though he died in 1954 his legacy lives on in two ways. Primarily he's credited with cracking Nazi codes and helping the Allies win World War 2. He's also the father of modern computing and the creator of the Turing Test. While the test was originally conceived as a way of determining if a human could be fooled by a conversation, in text display only, between a human and an artificial intelligence, it has since become short hand for any AI that can fool a person into believing they're seeing or interacting with a real person. The field of AI research isn't science fiction, although it is exciting and avant-garde. We're on the brink of a change in civilization so huge that, according to experts like Oxford Professor Nick Bostrom, it represents a fundamental change in our trajectory as a species.

## III- General Overview

Artificial intelligence are softwares constructed by humans to think by themselves. It was first brought up less than 5 years ago. Now a popular question is if we can implement these systems into our education systems since these machines provide us with error reduction.
Reducing errors in our education curriculum may indeed improve the quality of graduates but this issue also contradicts with itself since AI may end up replacing employees in some businesses. Some popular scientist and computer scientists have stated their opinion on AI such as Stephen Hawking, Elon Musk and Mark Zuckerberg. Elon Musk in 2017 said that he believed superiority in AI technology will most likely be the main reason behind WW3 ( World War 3). Stephen Hawking also stated "The development of full artificial intelligence could spell the end of the human race." Mark Zuckerberg the founder of Facebook said implementing AI into our daily lives will enhance and improve the capabilities of human beings. Many people don't realise how exposed we're in to AI right now. We are using AI on a daily basis without even knowing. One of the most obvious examples being Siri and Netflix. Siri is capable of comprehending people's sentences and Netflix can make recommendations depending on your favourite genres. Even though a clear majority of this era believe that AI will be the end of the human race a minority still support that it will change the way we live, decrease death rates and make us a better race overall. Is AI the right way to go is still a question waiting to be answered by many.

Some seem to believe handing education into the hands of AI is basically suicide. They supportive towards having real human beings who are capable of making mistakes bu also capable of understanding emotions so both arguments are valid. At this point it is only how much you value those assets. The Indian government tried to implement AI into their education curriculum in 2016 but failed drastically but it' s 2018 and we have improved massively on AI technology and the attention it gets rocketed in the past month or so. It's up to the UN now to decide whether they would like to hand education in AI's hands.

## IV- Major Parties Involved

### China

While not too long ago China was thought of as a manufacturing country, the country now intends to be a leader in many fronts. AI is an area the Chinese consider of utmost importance. According to the Times

Higher Education, in the period between 2011 and 2015, China published over 41,000 papers on AI. That's almost twice as much as the US number.
The Chinese government stands strongly behind AI adoption. Last year, they announced their intention to become "a principal world center of artificial intelligence innovation" by 2030. Then there are companies like Tencent, Alibaba and Baidu. From e-commerce to self-driving cars or search engines, AI will play a fundamental role in their success. Combined, they are worth around US$ 1 trillion.

## United States of America

In terms of AI projects, the US comes at an undisputed second place. In fact, both China and the US are miles away from other countries. Between 2011 and 2015, the US published almost 25,500 papers, according to the same source.
On top of that, the US ranks as the top country with the most AI companies. With over 1000 companies and US$10 billion in venture capital, the US is likely to become an AI superpower. Then there's companies like IBM, Microsoft, Google, Facebook, and Amazon. These companies also invest heavily in AI. America's pool of scientific knowledge combined with its business market power will allow it to stay on top.

## Japan

According with the Times Higher Education rankings, Japan stands in third place, with about 11,700 papers published. Indeed, this is not surprising. With an ageing population and decreasing workforce, AI will play a vital role in the Japanese economy. Even now, about 55% of work activities in Japan could be automated. With *current* technology. Its manufacturing sector, according to the HBR article, has a 71% automation potential. In the US, that number stands at 60%. And in office and administrative work, the difference is 16% to 9%.
With plenty of research into AI, a decreasing workforce and a high automation potential, Japan is likely to continue right at the top. Its long-standing willingness to invest in technology may also prove key.

## United Kingdom

The UK is not much behind Japan, though. In fact, when it comes to published research papers on deep learning, it has already passed Japan. With close to 100 published papers, the UK became number 3 on the topic. As for total published papers on AI, between 2011 to 2015, the number was 10,100 - slightly behind Japan.
And the UK is no stranger to AI, DeepMind Technologies Limited was founded in 2010, in Britain. According to the Financial Times, DeepMind is today a world leader in AI. It employs 250 researchers, from mathematicians to neuroscientists.

### Germany

The 5th country with the most published researched papers on AI is Germany. Between 2011 to 2015, the number stood at nearly 8,000. Germany, like China, also plans to become a leading hub for artificial intelligence. According to an FT article, Germany's Max Planck Society, two technical universities, and its leading exporting state are combining their artificial research intelligence together with companies like Porsche, Daimler, and Bosch. The Cyber Valley, as they call it, is the result of this, and it has even received support from Amazon, who plans to open a lab there.
Germany, like Japan, is also experiencing a working population decline. What's more, it too has a high automation potential, standing at 47.9%. Its strong industry capabilities, combined with powerful companies and good education make it a fertile ground for AI.

## V- AI Provides Us With

### 1. Error Reduction:

Artificial intelligence helps us in reducing the error and the chance of reaching accuracy with a greater degree of precision is a possibility. It is applied in various studies such as exploration of space. They are created and acclimatized in such a way that they cannot be modified or get disfigured or breakdown in the hostile environment.

### 2. Difficult Exploration:

Artificial intelligence and the science of robotics can be put to use in mining and other fuel exploration processes. Not only that, these complex machines can be used for exploring the ocean floor and hence overcoming the human limitations.

Due to the programming of the robots, they can perform more laborious and hard work with greater responsibility. Moreover, they do not wear out easily.

## 3. Daily Application:

Computed methods for automated reasoning, learning and perception have become a common phenomenon in our everyday lives. We have our lady Siri or Cortana to help us out.

We are also hitting the road for long drives and trips with the help of GPS. Smartphone in an apt and every day is an example of the how we use artificial intelligence. In utilities, we find that they can predict what we are going to type and correct the human errors in spelling. That is machine intelligence at work.

Artificial Intelligence is widely employed by financial institutions and banking institutions to organize and manage data. Detection of fraud uses artificial intelligence in a smart card based system.

## 4. Digital Assistants:

Highly advanced organizations use ‘avatars’ which are replicas or digital assistants who can actually interact with the users, thus saving the need of human resources.

For artificial thinkers, emotions come in the way of rational thinking and are not a distraction at all. The complete absence of the emotional side, makes the robots think logically and take the right program decisions.

Emotions are associated with moods that can cloud judgment and affect human efficiency. This is completely ruled out for machine intelligence.

## 5. Repetitive Jobs:

Repetitive jobs which are monotonous in nature can be carried out with the help of machine intelligence. Machines think faster than humans and can be put to multi-tasking. Machine intelligence can be employed to carry out dangerous tasks. Their parameters, unlike humans, can be adjusted. Their speed and time are calculation based parameters only.

## 6. Medical Applications:

In the medical field also, we will find the wide application of AI. Doctors assess the patients and their health risks with the help of artificial machine intelligence. It educates them about the side effects of various medicines.

Medical professionals are often trained with the artificial surgery simulators. It finds a huge application in detecting and monitoring neurological disorders as it can simulate the brain functions.

### 7. No Breaks:

Machines, unlike humans, do not require frequent breaks and refreshments. They are programmed for long hours and can continuously perform without getting bored or distracted or even tired.

## VI- Possible Problems:

### 1. High Cost:

Creation of artificial intelligence requires huge costs as they are very complex machines. Their repair and maintenance require huge costs.

In the case of severe breakdowns, the procedure to recover lost codes and re-instating the system might require huge time and cost.

### 2. No Replicating Humans:

Intelligence is believed to be a gift of nature. An ethical argument continues, whether human intelligence is to be replicated or not.

Machines do not have any emotions and moral values. They perform what is programmed and cannot make the judgment of right or wrong.

### 3. No Improvement with Experience:

Unlike humans, artificial intelligence cannot be improved with experience. With time, it can lead to wear and tear. It stores a lot of data but the way it can be accessed and used is very different from human intelligence. Machines are unable to alter their responses to changing environments.

In the world of artificial intelligence, there is nothing like working with a whole heart or passionately. Care or concerns are not present in the machine intelligence dictionary.

### 4. No Original Creativity:

Do you want creativity or imagination?

These are not the forte of artificial intelligence. While they can help you design and create, they are no match for the power of thinking that the human brain has or even the originality of a creative mind.

### 5. Unemployment:

Replacement of humans with machines can lead to large scale unemployment.

Unemployment is a socially undesirable phenomenon. People with nothing to do can lead to the destructive use of their creative minds.

Humans can unnecessarily be highly dependent on the machines if the use of artificial intelligence becomes rampant. They will lose their creative power and will become lazy. Also, if humans start thinking in a destructive way, they can create havoc with these machines.

Identifying and studying the risk of artificial intelligence is a very important task at hand. This can help in resolving the issues at hand.Programming errors or cyber attacks need more dedicated and careful research.Technology companies and technology industry as a whole needs to pay more attention to the quality of the software. Everything that has been created in this world and in our individual societies is the continuous result of intelligence.

## VII-Possible Solutions:

1. Setting conferences and programs in UN Member States to improve the exposition of AI to citizens.
2. Convincing Member States into cooperating together in order to buy these technologies and introducing their citizens into it.
3. Have big names (celebrities, scientists etc.) state their opinion on the matter so that the public is informed.
4. Provide citizens with augmented reality simulations so that they aren't concerned about the future
5. Separating schools into two (one system will have AI for teachers and the other will stick to the ongoing method.)
6. Working more on AI technology to make the systems incapable of harming human beings.

## VIII- Examples

### Siri

Siri is one of the most popular personal assistant offered by Apple in iPhone and iPad. The friendly female voice-activated assistant interacts with the user on a daily routine. She assists us to find information, get directions, send messages, make voice calls, open applications and add events to the calendar. Siri uses machine-learning technology in order to get smarter and capable-to-understand natural language questions and requests. It is surely one of the most iconic examples of machine learning abilities of gadgets.

### Tesla

Not only smartphones but automobiles are also shifting towards Artificial Intelligence. Tesla is something you are missing if you are a car geek. This is one of the best automobiles available until now. The car has not only been able to achieve many accolades but also features like self-driving, predictive capabilities, and absolute technological innovation. If you are a technology geek and dreamt of owning a car like shown in Hollywood movies, Tesla is one you need in your garage. The car is getting smarter day by day through over the air updates.

### Cogito

Cogito originally co-founded by Dr. Sandy and Joshua is one of the best examples of the behavioral version to improve the intelligence of customer support representatives, currently on the market. The company is a synthesis of machine learning and behavioral science to enhance customer collaboration for phone professionals. Cogito is applicable on millions of voice calls that take place on a daily basis. The AI solution analyzes the human voice and provides real-time guidance to enhance behavior.

## Netflix

Netflix needs no introduction – it is a widely popular content-on-demand service that uses predictive technology to offer recommendations on the basis of consumers' reaction, interests, choices, and behavior. The technology examines from a number of records to recommend movies based on your previous liking and reactions. It is turning more intelligent with each passing year. The only the drawback of this technology is that small movie go unnoticed while big films grow and propagate on the platform. But as I wrote earlier, it is still improving and learning to be more intelligent.

## Pandora

Pandora is one of the most popular and highly demanded tech solutions that exist. It is also called the DNA of music. Depending on 400 musical characteristics, the team of expert musicians individually analyzes the song. The system is also good at recommending the track record for recommending songs that would never get noticed, despite people's liking.

## Nest (Google)

Nest was one of the most famous and successful artificial intelligence startups and it was acquired by Google in 2014 for $3.2 billion. The Nest Learning Thermostat uses behavioral algorithms to save energy based on your behavior and schedule. It employs a very intelligent machine learning process that learns the temperature you like and programs itself in about a week. Moreover, it will automatically turn off to save energy, if nobody is at home. In fact, it is a combination of both – artificial intelligence as well as Bluetooth low-energy because some components of this solution will use BLE services and solutions.

## Flying Drones

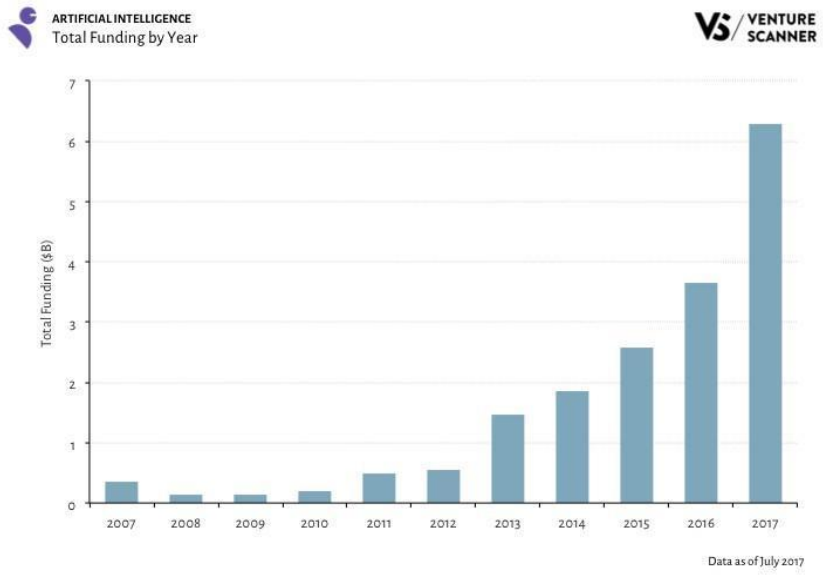
The flying drones are already shipping products to customers home – though on a test mode. They indicate a powerful machine learning system that can translate the environment into a 3D model through sensors and video cameras. The sensors and cameras are able to notice the position of the drones in the room by attaching them to the ceiling. Trajectory generation algorithm guides the drone on how and

where to move. Using a Wi-Fi system, we can control the drones and use them for specific purposes – product delivery, video-making, or news reporting.

### Echo

Echo was launched by Amazon, which is getting smarter and adding new features. It is a revolutionary product that can help you to search the web for information, schedule appointments, shop, control lights, switches, thermostats, answers questions, reads audiobooks, reports traffic and weather, gives info on local businesses, provides sports scores and schedules, and more using the Alexa Voice Service.

## IX- Appendices




*Increasement graphic of money spent on AI per year*

*One of the most advanced AI robots of the 21st  century (Sophia)*

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