ARTIFICIAL INTELLIGENCE – NEW BACKBONE TO EDUCATION

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ABSTRACT

When the term 'AI' is heard by anyone the first thought that pops in person's mind is of sci-fi movies like Star Wars and Robot where the robots in movie developed the human ability to think, feel, take their own decisions and behave as if they are humans. But the real meaning of AI is slightly difficult to understand due to its wide applications and less focus on teaching AI in primary and secondary education. With this age of rising technology and humans' dependence on machine power, there arises an urgent need to utilize the capabilities of Machine Learning and Artificial Intelligence for the educational uplift of youth of our society. Through this research, we try to highlight the different ways as well as future ideas for applications of AI in education.

Keywords: Artificial Intelligence (AI), Deep Learning, Chatbots, Quantum Computing, Smart Classroom, Smart Content, Personalised Learning.

I.   INTRODUCTION

"Technology can become the "wings" that will allow the education world to fly faster than even before- if we will allow it."—Jenny Ariedge When the term 'AI' is heard by anyone the first thought that pops in person's mind is of sci-fi movies like star wars and Robot where the robots in movie developed the human ability to think, feel, take there own decisions and behave as if they are humans. But the real meaning of AI is slightly difficult to understand. Artificial intelligence is the ability of the computer or the robot controlled by computer to do tasks that are usually done by humans and requires human intelligence and discernment. Also 'AI' is defined as machines programmed to think, make decisions like humans and mimic there actions. According to survey conducted by Ask About AI (conducted I December 2015),Over the years AI has have found a path in more than 100 applications to real life areas(sectors) such as Education, Healthcare, Agriculture, Transportation, Gaming, Online Shopping, Social Networking and Communication to name a few.

II.   CHARACTERISTICS OF AI

1.   Deep Learning:

Deep learning is an artificial intelligence function that imitates the working of human brain in processing data and creating patterns used in decision making. There are a large number of fields in artificial intelligence technology where the scope and use of deep learning is increasing. Some examples are Self driving modes in vehicles and automatic text generation.

2.   Data Ingestion:

The most precious thing now-a-days is data. With the stepping days, the data which we are producing is growing exponentially, hence AI has found an opportunity to step in this. In this AI is designed in such a way that to gather data itself and analyse it with it's previous experiences. Data ingestion is that transportation of knowledge from different sources to a data storage medium where it are often analyse by corporation. AI uses neural networks to analyse such a large amount of data.

3.   Chatbots:

These are the software which provides a window for solving customer's problems either through audio or textual input. Such bots have really changed it's meaning with the intervention of AI. With the help of AI, now-a-days these bots not only understands the commands but also the human languages. These chatbots not only offer services to customers in an interactive way but also provides product suggestions to users. For example the domino's chatbot, it has changed the way of ordering the food with the bot named 'Dom'. This bot can reorder the previous orders, offer menus, track deliveries of current orders and suggests more food items related to previous orders.

4.   Quantum Computing:

With the enhancement of AI technologies, it is helping to solve the complex quantum physics problems with the help of quantum neural networks along with the accuracy of supercomputers. It is an interdisciplinary field which mainly focuses on building quantum algorithms for improving computational tasks within AI(using machine learning) and IoT. Also quantum computers have the potential to revolutionize computation by making certain types of classically intractable problems solvable. An applications of quantum computing are Cyber Security, Drug development, Improvement of weather forecasting and Financial modelling and a few more in the list.

5.   Facial Recognition:

| Deep Learning | Facial Recognition | Data Ingestion | Quantum Computing | Chatbots |

Figure1

Let us discuss the term 'Facial Recognition' , it is a process of identifying an individual's face based on some data. With the help of IoT, Artificial Intelligence has mined a way to recognise individual faces using the biometric mapping technique. This technique is mostly used by mobile FR systems and Surveillance systems. To give an example, Clearview AI is an American technology company which offers surveillance technology for law agencies to monitor entire cities with a network of CCTV cameras exactly assigned each and every citizen with their social credit score in real time.

III.   AI IN EDUCATION SECTOR

1.   Personalized and interactive Learning: Every student has a unique way of learning new skills. It is quite difficult for a teacher to teach every student in a personalized way. This is where AI proves beneficial in providing content that is curated for the needs of each student and filling the gaps in knowledge and application of skills. Companies like newton provide AI based adaptive learning courseware through their 'Alta' program that include text and video instructions, assignments and review materials.

2.   Smart content: According to surveys done on students, it is found that audio visual content is around 40% more effective in understanding a concept, than simply text. Use of Augmented-Reality,3D animated videos and Virtual-Reality helps us visualize things that were unable to explore through textbooks.

3.   Smart Classrooms: Using AI in classrooms brings enthusiasm and enhances learning experience through Data Visualizations, demonstration of various animals or body organs through AR and VR.

4.   Monitor Student performance: Although teachers do a great job in determining a student's strength and weaknesses, AI can run a full analysis on the performance of every student in tests and assignments. China is putting this concept a step further, in the Jinhua Xiaoshun Primary School in eastern China, students wear a headband during class which measures their level of concentration in the lecture, and sends a detailed report live to the teacher. It does this by reading electrical signals from the brain and translating them to the amount of concentration using an algorithm.

5.   Removes Language barrier: In this world of Internet, it is possible to break the language barrier and spread quality education throughout the globe. Using AI based programs such as Google Translate, one can listen to lectures in their native language.

6.   Administrative Tasks management: In large institutions like colleges and schools, it is a hard and tedious work for the teachers to do tasks like grading the papers of a class of more than 60 students. These tasks like taking attendance, grading of tests, designing question papers, etc, can be automated using AI

software. Although AI cannot replace a teacher's grading, it can be made more and more accurate with each test over time. Instructors can use the software to dictate lectures for later use or catalyze tedious tasks like document and email creation.

IV.   FUTURE ROLE OF AI IN EDUCATION SECTOR

We already use AI in sector but this is upgrading daily. Mix of machine learning and AI tools are already transforming education. Many steps are taken to enhance this. Bill and Melinda Gates Foundation had invested nearly a quarter of a billion dollars to fund the development of personalized learning technology. This shows that in future, education will be faster paced and educational needs much more varied recognizing trends before they take hold and adapting quickly is an area in which artificial intelligence can be huge help. The World Economic Forum Estimates that AI will strongly encourages governments and education to focus on rapidly raising education and skills, with a focus on both STEM (science, technology, engineering and mathematics) and non-cognitive soft skills in order to meet this impending need.

1: Simplifying Administration Task & Develop personalized Learning

AI software will help for teachers to help exactly where students are needed and no students gets left behind. AI software that learns and adapts to each student's individual needs. This will focus on making mundane tasks easy for both students and teachers. AI will makes knowledge more accessible for marking students papers. It will be lifesaver for teachers when they will have to go through thousands of tests. AI will give people the possibility to pursue their educational objectives, no matter they are in the world.

2: Capturing Emotion of Students & Responding

There are two steps for AI 1. Emotion Recognition 2. Emotion Response. Recognising emotion is capability of machine to build a repository of emotion responses taken from different setups. In future with the help of AI we signify the students response in the virtual classroom scenario by use of their facial and voice recognition on parameters such as focus areas, hesitation, etc. As AI gets more sophisticated, it might be possible for a machine to read the expression on student's face and guess that it is difficult for student to grasp a particular topic and will modify a information more easily. It will help the teachers to collect data various students ability to detect, identify, measure and respond to varied student learning behaviours. This data can provide teachers with meaningful feedback and prompt response to make alterations in teaching methodology. With the help of voice recognition with AI technology, we will identify stress signals in students voice data which can alert the teachers to make reiterations and clarification. The technology can observe and process student's learning patterns and help in customizing the curriculum accordingly.

V.   CONCLUSION

With this type of qualitative research study, we get help to assess the Impact of AI on education system. The use of computer technology, its development and innovations led to the development of AI in different sectors. This technology is adopted in large no. of education institutions. this research study tells us the AI impact on administrative, instruction and learning aspect of education. AI developing the capability of computing and give easy method of embedding computer technologies in different machines, equipment and platforms. By these embedded systems we can use robots in the form of cobots or humanoid robots as to teacher colleagues or independent instruction, as well as chatbots to perform teacher or instructor like functions. The full consequences of AI development cannot yet be foreseen today, but it seems likely that AI applications will be a top educational technology issue for the next 20 years. At the end we should always remember that AI systems requires control by humans. A stunning result of this review is the dramatic lack of critical reflections as well as risks of implementing AI applications in higher education. We have to do further research is needed from educators and learning designers on how to integrate AI applications throughout the student lifecycle, to harness the enormous opportunities that they afford for creating intelligent learning and teaching systems. This research helps us to understand the reasons and mechanisms behind this dynamic development that will have an enormous impact on higher education institutions.

VI.   REFERENCES

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