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Role of Artificial Intelligence in Indian Education System

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ABSTRACT

Computer is being used in the field of education for many years and we have got mixed results from it. Although new discoveries in the field of Artificial Intelligence (AI) have shown very positive results in the field of education. AI technology has a very old history which is changing with the times and continuously advancing. This technology is completely based on intelligent agents who learn from the environment around them and take action based on that to maximize their chances of success. AI is a technology made up of machine and computer program that tries to solve problems independently like humans, draws conclusions and takes the right decision based on that. Most artificial intelligence systems have learning capabilities that allow people to improve their performance over time. Recent research on AI tools, including machine learning, deep learning and predictive analysis, aims to enhance the ability to plan, learn, reason, think and take action. In this paper, I will try to explain modern AI techniques and the use of AI in various fields of education.

Keywords- Artificial Intelligence, Chatbots, Virtual Reality (VR), Machine Learning, Learning Management System (LMS).

I. INTRODUCTION

Artificial intelligence means the development of human intelligence through the use of artificial means. In the words of John McCarthy, the father of AI, "AI is the science of making intelligent machines for the future with the help of computer software and hardware." AI is a subset of computer science and its roots are completely based on computer science and machine learning. The main objective of AI is to create machines that can act intelligently and independently and reduce human labor and manual work. Artificial Intelligent uses machine learning to create this type of intelligent machine. If you're using Spotify, Netflix and YouTube, you're actually using AI. Presently Siri, Alexa and Tesla cars are examples of AI technology.

Artificial Intelligence consist of two words “Artificial” and “Intelligence”. Intelligence is something that is related to human beings and a person who is intelligent has the chance to win the games of life, solve the problems of life more efficiently than those who have less intelligence. The computer is the artificial medium created by human being for solving various types of complex problems with high speed and accuracy. The software programs running on the computer makes it intelligent. AI is the branch of computer science that studies how to make computer intelligent like human being. An AI application has the following characteristics:

a) Ability to act intelligently as human
b) Ability to simulate functioning of human brain
c) Ability to adapt and learn as an intelligent human
d) Ability to perform an intelligent action
e) Ability to process symbols and natural language like humans

II. HISTORY OF AI

Artificial Intelligence began in earnest with the emergence of modern computer during 1940s and 1950s. In 1961, Newell and Simon built a general problem solver which could think humanly in problem solving. In 1978, Bellman suggested automation of activities like decision making, learning etc., which involve human thinking. In

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1985, Haugeland proposed the concept of machines with mind, in 1990 and 1991, Kurzweil, Rich and Knight proposed of building machines which could act like human and perform intelligent tasks. In 1985, Charniak and McDermott proposed to build the machines which could think rationally, i.e., they could do computation by perceiving, reasoning and then acting in a rational way. Schalkoff (1990) and Luger and Stubblefield (1993) proposed for building of system which could also act rationally. This involved automation of intelligent computations.

III. ARCHITECTURE AND TECHNIQUE OF AI

An intelligent agent is an example of an AI machine. The architecture of intelligent agent is the architecture of AI machine. Main parts of the architecture include actuators for producing outputs, sensors for taking inputs, environment in which the machine is to operate and the performance measures against which the AI machine is to take decisions. There are two parts of an AI technique:

a) The knowledge representation which is used to capture the knowledge about the real world.
b) The search algorithm which is used to find the solution to the problem.

In an AI technique, knowledge should be represented in such a way that it can be understood by people who must provide it. It should be able to capture generalization in knowledge, i.e., group important properties together so that it can be used in many situations. It should be made easy to modify the knowledge to correct the errors and to reflect the change in the domain. Different types of AI problems have different type of knowledge representation and different algorithm for solving it.

IV. IMPACT OF AI IN EDUCATION SYSTEM

According to Business Today, by 2024, 47% of learning management tools will be AI-enabled. Also, AI in the education industry is expected to reach a CAGR (Compound Annual Growth Rate) of 40.3% between 2019 - 2025. You surely remember the days when the library was the only source of learning new information. But in the last two decades this scene has completely changed and now all the means of learning and teaching are just a click away from us. The use of technology in the field of education has revolutionized the education systems with better accessibility and better performance. The Association for Educational Communications and Technology (AECT) defines educational technology as "the study and ethical practice of improving learning and performance by creating, using and managing appropriate technological processes and resources". It defined instructional technology as "the theory and practice of the design, development, use, management and evaluation of processes and resources for learning". It is being speculated that AI will prove to be helpful in making online education even better. This can give impetus to the Indian education market, which is growing rapidly to reach US$ 2 billion in 2022-23. We know that the role of teacher is irreplaceable in the field of education but AI will help in enhancing the skill of the teacher, improving his shortcomings and making teaching work easier. Automation of administrative task will enable teachers to utilize time in an effective manner. With the help of AI, students can get personalized courses, tests, learning methods and delivery. This was otherwise a challenge for teachers as it was nearly impossible to manage and provide teaching tailored to the specific needs of each student.

Automation can enable access to quality education to a large population in the form of smart content:

a) Digital lessons in the form of digital text books and study guides can be created.
b) AI-powered information visualization can help in creating engaging content.
c) Curate and customize content as per the student's learning curve.
d) Transformation of physical classrooms into virtual ones through web, mobile and online sites.

V. HOW AI IS AFFECTING EDUCATION SYSTEM

In today's era, the role of AI is increasing in every area of our life. The Corona pandemic has affected the education sector of the world very badly and due to the pandemic there has been a lot of change in the education sector of our country. All the people associated with the education world have strengthened their faith in modern technology. Here I am telling you some important points, with the help of which you will be able to know how artificial intelligence technology will strengthen the teaching-training system in the future.

Streamlining Indian Education System

The good examples of AI that people know are 'Cortana' by Windows, 'Siri' by Apple and 'Alexa' by Amazon. These are voice recognition systems that can mimic human intelligence. These systems, based on AI technology, are not only increasing our knowledge but they are also developing our decision making ability. An application based on machine learning technology collected and analyzed the data of students related to various dynamics like academic performance of students, reason for their dropping out of school, quality and skills of teachers, social demographics, gender, etc. The application found a pattern using various methods of machine learning that was able to predict how many students would drop out of school in the future. With the

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help of this type of data, the government can take effective steps to prevent this drop out. Experiments like this is a proof that AI is acting as a catalyst in streamlining the education system and helping institutions make better decisions. Implementing AI on such a large scale will certainly help us plug the loopholes in the current system.

Individualized Education

As we know that there is a huge shortage of good teachers in our country. In addition, curriculum and teaching standards have not improved at a rapid rate. However, the intelligentsia of the country has repeatedly highlighted that our students are not getting good quality education. AI can be the solution to this problem. Artificial intelligence technology can ensure that education is personalized for individuals. There are already adaptive learning software and digitized programs for students. Artificial intelligence technology can not only meet the needs of each student, but also the specific subjects they need to emphasize.

Assistance to Teachers

Teachers must constantly update their skills to be able to impart knowledge to students effectively. But we know that teachers have to handle multiple responsibilities like evaluation, grading, paper setting, mark sheet making and tracking the performance of each student. If these tasks are made easier for them, they will focus more on curriculum development, teaching quality and skill development. Artificial intelligence technology will allow teachers to keep themselves updated on things they didn't know. With this, they will have a more in-depth and comprehensive knowledge base to teach the new generation.

Proctored Online Assessment

Proctoring is the process of supervising students. Remote proctoring is a proctoring process in which an examiner is not required to be present in the room where the online examination is being conducted. Students can appear for the examination from any place in the class/home. It uses a webcam connected to the computer system to authorize remote students. Many educational institutions, corporates, universities have started using this technology to make the examination process easier with the artificial intelligence of remote proctoring.

Answer Sheet Evaluation

Answer sheet evaluation is one of the most complex and headache-causing tasks for any educational institution. Many institutions are moving towards onscreen evaluation system as it is intelligent and calculates the score automatically. It also ensures that the examinee has verified all the pages of the answer sheet in the true sense. It also saves the logistical cost of handling physical answer sheets. It can help you automate result processing.

Automated Tasks

Even today in the educational process, a lot of work is done manually. But with the help of artificial intelligence technology, routine tasks like grading, evaluation, admission process, progress reports and organizing resources for lectures will be done easily. The work of teachers will be completed from time to time. It will help in developing the skills of the students.

Universal Access

Artificial intelligence technology will help in creating smart content. This will benefit all students, including those who cannot see or hear. It can provide real-time subtitles to students for everything said by the teacher. Artificial intelligence technology can break down the silos that prevent students from moving forward.

24X7 learner support and tutoring

Students can solve their questions at their own pace and without waiting for the teachers. Whereas artificial intelligence technology tutors and chatbots can help students sharpen their skills and improve weak spots outside the classroom. With the help of Artificial Intelligence technology, teachers can deliver their experiences more effectively.

Immediate response

Artificial Intelligence Technology can not only help academic/academic boards to design a curriculum, but it can also help in getting instant feedback about the success of the course. Artificial intelligence technology systems can be used in schools, especially for online monitoring and to alert teachers if there is a problem with the performance of students.

Smart Content

When one thinks about the role of Artificial Intelligence in education, smart content always comes to mind. Smart content is personalized and can be updated dynamically based on demographic, contextual and behavioral data. Artificial intelligence technology is bringing a big change in our daily life as well as in various fields.

VI. TECHNOLOGIES WITH AI

You know that technology plays a very important role in the field of education. With the rise of artificial intelligence in education, it is being used in many different ways to help students learn. Here are some technologies with AI that are already influencing education and will impact in every way:

Chatbots

If we look carefully, chatbot is actually made up of two words, first is chat and second is bot. Chat means conversation and Bot means Robot. In this way Chatbot means a talking robot. This is not a physical robot. A chatbot is a computer software built on the principles of AI and Natural Language Processing. The main function of a chatbot is to communicate with the customer. When the customer asks a question to the chatbot, the chatbot gives an instant reply to the customer. While interacting with the chatbot, the customer feels that he is actually talking to a human being. Currently big companies like Hostinger and Dominos are using chatbots to communicate with their customers.

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Virtual Reality (VR)

Virtual reality is an artificial environment created with the help of software. In addition, it is presented to the user in a way that prompts the user to be real. That is, it is very easy for the user to believe that what he is seeing, hearing and feeling is really present. Virtual reality is actually a type of illusion which we can experience with the help of computer and software. It is a believable and 3D technology based world that you can feel physically and mentally. Presently virtual reality is used in different fields such as military sector, medical field, automotive sector, education and training, space, sports and entertainment etc. After the arrival of VR technology, students will be able to learn anything quickly. Have you been to Mars, have you seen dinosaurs, have you seen how Edison made the bulb, have you seen how the British came to India? Your answer will be – NO. But now our students will be able to see through VR and remember what you see more than what you hear. Students will be able to learn by watching sitting at home.

Learning Management System (LMS)

A learning management system (LMS) is a type of software application that allows educational institutions to quickly and easily perform the tasks of administration, documentation, tracking, reporting, automation and delivery of educational courses, training programs, or learning and development programs. The concept of Learning Management System originated directly from e-Learning. LMS mainly focus on online learning delivery. It acts as a platform for online content, which includes distribution and management of all types of content including videos, courses and documents**.** An LMS distributes and manages all types of content including videos, audio and documents. Similarly with technology in education, efforts are being made to add all kinds of creative and effective elements which are trying to make education more interesting and profitable. The aim of LMS is to make education effective for the students. In addition, it allows the learner to access the material as often as possible, increasing the convenience of the learner. Various assessment tools and reports track the performance of the student, encourage them to revise as per the need and requirements. This ensures that the session proves to be effective for the students.

VII. CONCLUSION

There is no doubt that AI is the most promising technology of the future and AI will be of great benefit to the education sector of our country. Keeping in view the potential of AI, CBSE has decided to teach it from the school level itself. CBSE has prescribed AI syllabus for its schools from class 8 to class 12 and currently students are studying AI in CBSE schools. The NITI Aayog of the Government of India had also released India's National Strategy for Artificial Intelligence (NSAI) in June 2018 and objective of this strategy to create a vibrant AI ecosystem in India. Market predictions indicate that AI will be around 15 per cent of India's current gross value by 2035. In the end we come to the conclusion that more research is needed in the field of AI because the results obtained from this technology are very promising and beneficial.

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