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ARTIFICIAL INTELLIGENCE: USE IN TEACHING-LEARNING PROCESS IN EDUCATION

Dr. Nisha Dubey[1]

[1]Assistant Professor, Mahamaya College of Education, Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur, Chhattishgarh, India.

ABSTRACT

The contribution of computer science (AI) in the field of education has always been significant. From robotic teaching to the phenomenon of an automated system for answer sheet analysis, AI has always helped both teachers and students. In this research we have done an in-depth analysis of diverse analysis developments implemented across the world such as computer science techniques applied in the education sector, thus summarizing and highlighting the role of AI in teaching and student analysis. Study shows that AI is the backbone of all informatics enabled intelligent teacher systems. These systems help in developing qualities such as self-reflection, responsive in-depth questions, splitting conflict statements, generating articulate questions, and decision-making skills.

Keywords: AI. Education, teaching, technology, K-12

1. INTRODUCTION

Artificial Intelligence (AI) is present in our lives and is advancing with efficiency in modern times. The beginning of AI is often traced back to the 1956 Dartmouth Summer Scientific Research on Computer Science. Today, AI is used in police investigation of cancer, reducing the risk of aircraft collisions, and development of autonomous vehicles, etc. Robots equipped with AI have outperformed human surgeons in fixing cuts, performing search and rescue missions, caring for children, elderly and hospital patients, assisting Master Card firms in detecting fraud.

AI technology has been applied in education in recent twenty years. Intelligent tutoring systems (ITS) cover all major AI topics (e.g., data illustration, machine learning, language, planning, reasoning, explanation), and hence the system has shaped an inspiring test-bed for formalizing psychological trait theories and experimenting with their operation. AI in education has been applied in many domains, such as physics, programming, essay writing, and reading, but since the development of educational systems. The most common AI applications in the academic field include data visualization, intelligent teaching, language processing, and autonomous agents. AI in education has created powerful learning environments and positive interactive experiences for college students for decades.

The rapid advancement of technology such as computer science (AI) and artificial intelligence has compressed all industries, including education. A recent report by IBM, Burning Glass, and the Business Education Forum shows that the amount of job opportunities for knowledge and analysis skills may increase from 364,000 to 2,720,000 in 2020.

This means that the gap between the offer and demand for individuals with AI skills is growing, with a report showing that there is a base of 300,000 AI professionals worldwide, although there are many opportunities available, and this gap is leading to higher salaries for those in this field.

Artificial Intelligence in teaching-learning process

Since the inception of education, the teaching strategies as well as the bond shared between learners and teachers have evolved a lot. Teaching strategies across the world have become more structured to deliver better, more efficient results. The main reason for this change is the constant intervention of technology. On the back of the constant technological advancements, we are witnessing a paradigm shift in the teaching-learning methodology.

The relationship between teachers and students is dynamic, where teachers have become more accessible and are far better able to understand the thoughts of their students. Technology has also made learning more cooperative, as educators and students are working on a two-for-one cycle to achieve better results.

AI used in education

Artificial intelligence (AI) is already providing teachers and schools with innovative ways to understand how their students are progressing, as well as allowing for faster, personalized, targeted.

1. AI can automate basic activities in education, such as grading.

While AI may never be ready to truly replace human grading, it is getting pretty close. It is currently possible for academics to replace grading for almost every type of multiple choice and fill-in-the-blank testing, and automated grading of student writing is probably not so far behind.

2. Students can get extra help from AI tutors.

These programs will teach students the basics, but are not yet ideal for helping students learn higher-order thinking and creative thinking, something that real-world lecturers still need to facilitate. Still, the possibility that AI tutors will have the ability to try these things in the future should not be ruled out.

3. AI-powered programs can provide useful feedback to students and teachers.

AI can not only help educators and students tailor courses to their needs, but it can also provide feedback to both about the success of the entire course. Such AI systems enable students to receive the help they need and professors to discover areas where they can improve teaching.

4. It can change the role of teachers.

There will always be a job for teachers in education, but what that role is and what it involves may change due to new technology within the type of intelligent computing systems. As we have already discussed, AI can handle tasks like grading, help students improve learning, and even become an alternative to tutoring in the real world.

5. AI-powered data can change the way schools find, teach, and support students.

Smart data aggregation powered by intelligent computer systems is already transforming the way colleges interact with prospective and current students.

Latest Applications of Artificial Intelligence

1. AI in Marketing: Customer data is used to predict the activities of an individual with the help of machine learning and help in easy segmentation for marketers.

2. AI in Banking: A rapidly growing approach where many banks are using AI powered technologies to detect credit card fraud, detect anomalies, and provide customer support through electronic virtual assistants.

3. AI in Finance: DS uses this approach to detect patterns in the market in a very short period of time. These machines keep track of past data patterns and predict future insights of the data.

4. AI in Agriculture: Using some automation approach it helps farmers for better yield of their crops and also to protect them from weeds.

5. AI in Healthcare: It uses complex algorithms to detect and simulate complex human conditions and provide medicine in advance.

6. AI in Gaming: To generate adaptive and intelligent behaviour for players.

7. AI in Space Exploration: AI and ML are the best way to handle and process data at this scale. This AI is being used for NASA's next mission Mars 2020.

8. AI in Autonomous Vehicles: AI systems collect data from the vehicle's radar, cameras, GPS, and cloud services to generate control signals that operate the vehicle.

9. AI in Chat Bots: Virtual assistants are being widely used in every home today, such as Siri, Alexa, and Quota. It can be used to control devices in the home, book cabs, order food, etc.

10. AI in Artificial Intelligence: Artificial Intelligence in social platforms like Facebook. AI uses machine learning and deep learning algorithm techniques for face detection and automatic tagging, design feeds based on our interest, detect hate speech and negative content.

2. AI IN FUTURE

Although there continues to be extensive debate over the pros and cons of implementing AI technology in education, including concerns about cloning and the ethical considerations outlined above, there is growing consensus that the extraordinary range of current and future benefits will carry the day This report on artificial intelligence in education was developed by the innovative, online Master of Science in Applied Artificial Intelligence program at the University of San Diego, an AI industry thought leader and education partner. The World Economic Forum estimates that by 2022, a very large number of companies will adopt technologies such as machine learning, thus encouraging governments and education to focus on rapidly increasing education and skills, focusing on both STEM (science, technology, engineering and mathematics) and non-cognitive soft skills, to meet this need. A recent study by Microsoft shows that by 2030, students will need to understand two aspects of this new world by the time they graduate:

- Learn how to use changing technology such as AI to their advantage
- Understand how to work together with people to solve problems effectively

Preparing students for working with AI in the future starts early. Since most young people are exposed to digital technology by college age, it is vital to teach them the skills they need to succeed in digital work. By incorporating AI into education, the future workforce will be better prepared to face the unknown challenges of tomorrow's work.

3. CONCLUSION

The role of AI in education, especially K-12 education, offers unique benefits beyond personalized learning, tutoring, or automation. AI can enhance classroom engagement by creating interactive and dynamic content, making learning more enjoyable and effective. Intelligent content creation tools can adapt to diverse learning styles, helping teachers design engaging lessons that cater to students with different learning preferences. After all, the ultimate goal of AI is to improve human life, improve efficiency, and solve complex challenges in a variety of fields, from healthcare and education to business and environmental sustainability. Achieving this goal requires continued research, responsible development, and ethical deployment of AI technologies. Integrating AI into K-12 education goes beyond automation, providing tools that enhance teaching methods and contribute to more dynamic and effective learning environments. The future of AI in K-12 education is very promising, providing dynamic tools to enhance engagement, assess learning in innovative ways, and create personalized, immersive learning experiences.

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