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ARTIFICIAL INTELLIGENCE AND EDUCATION

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ABSTRACT

We are in the 21st century. Artificial Intelligence has now become a part and parcel of life. AI is emulation of human intelligent behavior by a machine. Learning Algorithm or machine learning is a part of AI. Machine learning is about input and output. AI behaves like a human intelligence. Big companies like Amazon, Flipkart etc. are using Artificial Intelligence. Facebook has used Artificial Intelligence and acquired WhatsApp. Artificial Intelligence is widely used in society for three factors, which are- i) for supervised learning algorithm where both output and input are known, ii) for unsupervised learning algorithm where input is known but output is unknown and iii) reinforcement learning algorithm where both are unknown. All the above-mentioned factors are based on the input data and output data. Artificial Intelligence is also being used in the drones. We are developing autonomous weapon systems.

This paper will provide an overview of how Artificial Intelligence can help in education. Also, it will have an overview on the various

applications of Artificial Intelligence. Also, this paper will have a look on the application of Artificial Intelligence in health and medicine, environment. Also, the paper will have a brief discussion on a national strategy on Artificial Intelligence.

Keywords- Artificial Intelligence, Learning Algorithm, Machine Learning, input data, output data

INTRODUCTION

For the country to grow the contribution of youth is very much essential and for that education of youth is very much necessary. As a largest youth population in the world, India has an advantage over other nations to become a global leader. With the scope of Artificial Intelligence in India increasing, it is the right time for the implementation of AI in education and to leverage its benefits and make the youth AI-ready for the future.

AI is the ability of a digital computer or computer control robot to perform a task which is commonly associated with Human Intellectual



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process such as ability to reason, discover meaning, generalize or learn from past experience. All the important tasks are codified and are using Artificial Intelligence.

Machine Learning is a branch of AI. Machine Learning is a learning algorithm, to perform a task by increasing accuracy in predictable outcome. It is concerned with the implementation of a computer software that can learn automatically. Machine Learning algorithms that are trained by humans are based on pre-existing data without human input are referred to as unsupervised. Machine Learning delivers the most value when we need to make lots of similar decisions quickly for example defining the price of a product in market with rapid change of demand or approving or denying credit application.

Artificial Neural Networks (ANN) are also commonly referred to as Deep Learning. Neural Networks work with several hidden layers that are nested between the output and are connected to each other through connections that resembles neurons in the brain. These neurons all have the mathematical formula to optimize the accuracy. The term Deep Learning comes from the fact that these hidden layers can be nested upon other

hidden layers to some depth, but has nothing to do with depth of the content. Deep Learning recently has gained much popularity, as it is capable of obtaining unprecedented accuracy for large machine learning algorithm problems. ANN is used in geographical location, IP address, amount of transaction, and number of transactions.

ARTIFICIAL INTELLIGENCE IN EDUCATION

Quality of education is very much essential for the youth to become a good leader in future. With the scope of AI in India increasing day by day, the education sector needs to update its strategies by taking into account the impact of AI on education in India and how this will help to young minds to become a global leader. To make India AI-ready, it is necessary for the youth to be AI-ready first. Innovation by the government of India like Atal Innovation, launch of INDIA AI as the central hub for everything AI in India and beyond. Also, CBSE has made the effort in introducing the AI in schools. These are some of the most important and commendable steps to make AI education in India and preparing the youth ready for an AI future. AI in education in India is also going to play an important role in

achieving the targets that the country has set to achieve by 2030, which is line with UN Sustainable Development Goals. AI also help in increase the efficiency of our teachers through various AI oriented applications like real time text to speech and text translation system. AI in education will help in reducing the drop outs rates in government¹.

ADVANTAGES OF ARTIFICIAL INTELLEGENCE IN EDUCATION

Artificial Intelligence plays a very important role and have a following advantages-

1. AI can handle the repetitive tasks very easily. With the advancement of AI in education, teachers or educators will have time and will be able to come up with the new methods of teaching. The advantages of AI in education look at the possibility of using AI operated grading system which evaluates the objective answers. Which we also see in the present scenario during the online mode of teaching.
2. AI helps in individualizing education. With the AI, our technological superhero,

swoops in to save the day here as well. Up until now, all the students have had to fit into one concrete education system even though every mind is different and possesses divergent levels of intelligence. One teacher cannot possibly reach out to every level while AI in the classroom can surely provide a personalized education that helps every student.

3. AI also assist our teachers but sometimes the role played by AI often deems to make a fear amongst the professors. Today almost everyone is afraid of AI technology replacing and reducing the human value or mode of education, further taking over their place. Further, AI may also acquire almost a range of human intelligence in the society but that does not rule out the importance of actual human presence. Today, what AI does is almost finishing up all forms of minimal tasks like various grading or recording attendance in various institutional or corporate level, helping to teach inform of educational games or activities based on various technological structure, and

¹AI in Education: Benefits of AI in the Classroom (June 4 2020), <https://thestempedia.com/blog/ai-in-education-benefits-of-ai-in-the-classroom/>.



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storing student data systematically and much safely to make an educator's work easier. Education still requires a human presence.

4. AI provides the room for improvement. With the extensive amount of knowledge that is available in the universe, it wouldn't be a surprise if humans made some errors in the crafting of syllabus/courses. With the Artificial Intelligence education can point out the areas in which there might be an inconsistency. AI can ease the process of analysing the outcomes of every student and provide help to the ones that seem to be struggling.
5. AI prepares the student for future. Introducing kids to AI can open a whole new world of opportunities. Looking at the current trends, by teaching AI to young minds, educators can bring them closer to a well-planned career whether it be a high-paying job or their own venture, acquaint them with some of the most useful scientific concepts like coding and big data, give a push to their imagination

and in turn, innovation abilities, and also equip them to contribute to the development of the society. Artificial Intelligence is a boon to the world and teaching AI in the classroom will help kids utilize it to its best potential.² Coding is the new thing which has been provided in the National Education Policy of 2020. And in some states it has been introduced from class six onwards.

NEW EDUCATION POLICY AND ARTIFICIAL INTELLEGENCE

As the New Education Policy has been announced by the Government of India, which outlines the comprehensive framework to develop education in a country. The policy has been drafted by *K Kasturiranjana*³ Committee. According to the policy the schooling system has been changed to 5+3+3+4 structure, which earlier was of 10+2 structure. The new policy highlights skill-based programmes, which includes integrating sports education, hands on learning and storytelling-based pedagogy. It also

²AI in Education: Benefits of AI in the Classroom (Last updated on June 4 2020), <https://thestempedia.com/blog/ai-in-education-benefits-of-ai-in-the-classroom/>.

³ Former ISRO Chief.



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includes students to choose subjects from different areas of their own interests.

NEP 2020 makes India a knowledge superpower and provide education to all. In order to build the digital infrastructure and prepare the future generations to drive unique innovations, the policy focusses on creating learning apps, online courses and modules, and satellite-based educational TV channels. These channels can also act as alternative mode of education in times such as the ongoing pandemic, when the traditional modes of education are failing.

With the government naming ‘coding’ as a 21st-century skill, the NEP 2020 aims to teach students coding from class six to help students to learn and understand various skills of coding from an early age. Further, it also aims to make the future generations employment-focussed by teaching skills required at a modern workplace; this includes introducing and using technologies such as AI and analytics, which are built on the premise of critical thinking, logical thinking and problem-solving skills.

Government has also acknowledged the importance of coding as an essential skill in a digital-first future is reassuring. The introduction

of coding from Class 6 onwards is, therefore, a significant step in the right direction.

As the new policy recognizes the rising importance of skill-based learning, colleges and universities are also encouraged to launch programmes, which are specifically designed to understand these new technologies. In conclusion, NEP 2020 understands the need to create a 21st century competitive, quality workforce and embraces all changes that will be help India become a leader in disruptive innovations.

APPLICATION OF ARTIFICIAL INTELLEGEENCE IN DIFFERENT FIELDS

1. LEGAL EDUCATION-

AI has made the powerful impact on every sphere of human life. Though AI is also modifying in every sector, legal field is one of them. But the biggest problem faced by technologically handicapped judicial systems of developing countries is that of the alarming rise in legal dispute. The total number of pending cases in India as of 31 January 2021, is 37,251,615. This has resulted in an enormous pendency and backlog of cases. The only way to solve this problem is through the application of AI and technology in the courts so that it can assist the



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judges in various legal procedures and reduce the backlog. AI can be used to bring transparency and uniformity to the judicial system. It can help the judges to make an error-free and unbiased decision. Apart from that, the introduction of AI in the legal field can lower the expenses or costs of litigation and judicial proceedings, thus, making it accessible to all sections of society.

With the immense rise in the pendency of cases and delayed justice, artificial intelligence can be the most effective solution to this problem. *“We have the possibility of developing Artificial Intelligence for the court system, only for the purpose of ensuring that undue delay is prevented in the delivery of justice.”* AI can help the justice delivery system to become “efficient, time-bound, litigant centric, affordable, accessible, cost-effective, transparent and accountable.” Before giving the final verdict, a judge has to perform a number of complicated procedures that are tedious as well as tiresome. As lawyers, judges can also use different AI-powered services to perform these monotonous tasks such that the overall decision-making process becomes faster and efficient⁴.

⁴ Recently, in the 19th biennial state-level conference of judicial officers, S.A. Bobde, Chief Justice of India, said.

The first and foremost significance of artificial intelligence in the field of law is that it saves a huge amount of time. AI can solve difficult and complicated legal problems without any error within a very short span of time, which is not possible in the case of humans. Moreover, machines can accurately perform complex legal tasks and can deal with more information as compared to humans within a fraction of seconds⁵.

The entire legal world revolves around the clients so the lawyers need to adjust to the changing demands of the clients. Since AI saves a lot of time by performing tedious repetitive tasks, lawyers now get enough time to build and improve the relations with clients.

2. INDUSTRY-

The largest user of robot is the automotive industry in manufacturing of cars, whereby industrial robots are widely used to perform the task of material handling, spray painting, assembly of parts, welding. Manufacturing Industry by combing the elements of robotics, AI, Information and communication technology

⁵ Diganth Raj Sehgal, Impact of Artificial Intelligence on the legal system, (March 2021), <https://blog.iplayers.in/impact-artificial-intelligence-legal-system/>.

and sensors has increased the productivity resulting in 4.0 Industrial revolution.

3. ENVIRONMENT-

Drones and AI are used for the conservation of biodiversity by tracking animal movement, deforestation activity, illegal mining activities and based on the temperature, humidity and vegetation AI can predict on the risk factors for forest fires. It minimizes the loss of wildlife through forest fire management.

4. SMART CITY AND INFRASTRUCTURE-

Integrating AI with city infrastructure for urban planning infrastructure development. AI can be used to identify vulnerable or sensitive areas which are constantly heat causing loss of life and property during floods, earthquakes, tropical cyclones. AI also helps in crowd management or traffic management of city.

NATIONAL STRATEGY ON ARTIFICIAL INTELLEGENCE

NITI Aayog in 2018 has released discussion paper of NSOAI (National Strategy on AI) to serve the societal needs of India in health care, education, Agriculture, smart city and infrastructure and smart mobility and

transportation, with the help of Centre of Research Excellence (CORE) that will support the development in AI or research in AI including government and universities. Also International Centre for Transformational AI (ICTAI) driven by private sector will also help in the development and deployment of AI.

I. BARRIERS IN ARTIFICIAL INTELLEGENCE

Constraints or the barrier has been identified by the NITI Aayog to reap the benefits of AI in India. Some of them are-

1. Privacy and security and lack of formal regulations to maintain anonymity of the data.
2. High resource cost and low awareness in the society for the use of AI.
3. Absence of broad-based expertise in implementation of integration of AI.
4. Absence of collaborative approach, government, industry and universities.

CONCERNS OF ARTIFICIAL INTELLEGENCE

There are concerns on the use of AI:



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- AI is used for the mass surveillance which reduces privacy and even undermining democracy by the companies.
- AI in weapons act as an autonomous weapon system, may decide on the battle field on life and death of people by increasing or decreasing the scale of war with no accountability.
- There is presently a lack of national or international regulations on the use of AI.
- AI algorithm may be biased and can be used to decide important applications, loan applications and insurance claim.
- The recent push into AI came from big US tech. companies such as Google, Facebook, Amazon, Apple, Microsoft and even US military so there is a concern that these big companies train the AI Algorithm.
- Another most big concerns of AI is that it affects the mind of young minds. On one hand it makes the work of young minds easy but on the other side it makes the thinking ability, mental development of the young mind's weak.

CONCLUSION

There is a need for guiding principle, for ensuring that AI is used only for public good. It has to be to augment people, support people and not replace them. It has to be democratized which means it cannot be in the hands of a small number of tech companies. AI has to be built on the foundation of trust and we need to understand any biases in algorithm and how they make decisions. AI is no more a futuristic idea but a reality. There are already remarkable deployments in education, healthcare, finance, transportation, security and surveillance. And is making remarkable modification in the decision making, risk reduction, business partners and system performance. Apart from all these AI is also making lawyers and judges by managing a time in various stages of the time and decision-making process. AI will make us think and will change the outlook by exploring new horizon from space to oceans. AI will definitely bring a revolution in mankind and can become the most powerful human innovation in this twenty first century or digital era.

AI has definitely changed the lives of students. They can improve their own achievement by experience that technology offers. Also, students are able to learn online anytime from any part of



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the country or world and also can get quick response to their problems when they do their work from home. At the same time AI leads to the negative impact. One of them is replacing teachers or educators and decreasing employment in future. AI is an important tool for solving the biggest challenge that we face today, including climate change. According to big companies like amazon, Facebook, Microsoft, next generation engineers have to upskill themselves in these cutting-edge technologies to have a chance to work with big organizations of future and in order to prepare you. These big companies are offering programmes on these cutting-edge technologies.

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