

IEEE International Conference on Big Data and Computational Intelligence-2022

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It's a pleasure and an honour to address this *IEEE International Conference on Big Data and Computational Intelligence-2022*. Indeed, This is a great effort to encourage discussion on Artificial Intelligence, subject I love the most. Technology has transformed our work culture and ways. Time and again, technology has helped us to transform and solve key challenges.

If we were to name contemporary technology that has thoroughly revolutionized the 21st century, only two letters or words flash into our minds: that is '*Artificial Intelligence or AI*' which is part of word BRAIN & GAIN. Without a speck of doubt, AI has crept into our everyday life and all its allied spheres.

In 1956, John McCarthy defined the term Artificial Intelligence as:

'The science and engineering of making intelligent machines.'

Rudimentary, AI deals with the development of computer programs and systems that are capable of performing those complex tasks that require human intelligence, such as:

Decision-making, Decision Support Systems.

Object detection, recognition.

Solving complex problems, Solution oriented.

High-level computations and unrestricted imaginations ahead.

AI is the simulation of human intellect and brainpower by machines, machines learning & Deep learning. The mechanism of AI and its programming technique emphasize on three cognitive skills:

firstly, learning: it deals with data acquisition and the creation of rules to turn that data into actionable information.

secondly, reasoning: it focuses on choosing the right rule or algorithm to attain the desired outcome.

Lastly, self-correction: it deals with continually enhancing or fine-tuning algorithms and ensuring that they produce the most accurate and reliable results.

There is not just one technology under AI, but there are various useful technologies such as self-improving algorithms, machine learning, big data, deep learning, and pattern recognition. AI is envisaged in three forms or stages in the modern world.

Firstly, Artificial Narrow Intelligence: Also known as Weak AI, it is the stage of AI involving machines that can perform a narrowly defined set of particular tasks only. At this stage, the machine does not possess any thinking ability, it just performs a set of pre-defined functions. Examples of Weak AI include Siri, Alexa, Self-driving cars, Alpha-Go, Sophia the humanoid and so on. Almost all the AI-based systems built till the present date fall under the category of Weak AI.

Second is Artificial General Intelligence: Also known as Strong AI, it is the stage in the evolution of AI where machines and computers would

possess the ability to think and make decisions just like humans. There are currently no existing examples of Strong AI, however, it is believed by a multitude of researchers that soon we would be able to create machines that would be as smart as humans. Strong AI, some feel, is considered a threat to human existence by many scientists, including Stephen Hawking.

Third is, Artificial Super Intelligence: It is the stage of AI when the capabilities of computers will surpass human beings. Obviously, this is currently a hypothetical stage as depicted in movies like *Terminator*, *Transcendence*, *Automata* and *Avengers* etc and science fiction books, where machines have taken control over the world. But, the thing is clear, it is ever evolutionising, unrestricted & unlimited

In today's era, we are surrounded by data. Massive data have been produced daily by abundant businesses and diverse research studies. A load of analyzing such mammoth data may bury the endeavours of a human researcher, Thanks to AI applications: *Machine learning* can swallow that data easily and turn them into actionable information quickly.

AI has been employed in increasingly more areas of our lives, as both businesses and general people like us rely on its recommendations. In 2021, investments in the realms of AI-based research by large and small businesses nudged new heights, outpacing all predictions and expectations.

In the past two years, huge investments were exercised into drug and molecular discovery as a direct result of the global need to find and

develop vaccines that would hopefully stop the COVID-19 pandemic. The medical world experienced the most significant amount of private AI investments ever.

The scope of AI in India is still in the adoption stage. Luckily, AI is being used in our country to find smart solutions for contemporary problems in almost all the major sectors that affect us directly or indirectly. From agriculture to healthcare, from education and infrastructure to transport, from smart banking to cyber security, and from hospitality to entertainment, we can experience the mighty presence of AI almost everywhere in our country. The scope of AI in India is promising.

Undoubtedly, AI has immense potential to change each sector of the Indian economy for the benefit of our society. Soon, there would hardly be any business or sector in India which would be untouched by this powerful tool. This is the reason why there has been an increasing demand for AI online courses in India.

Another aspect that paved the path of understanding and adapting AI in India is the *online education mode*. Online teaching and learning have become a huge part of the Indian education ecosystem; especially after the pandemic.

The clear application and scope of AI in India can be realized in many sectors:

1. In, Agriculture: AI can help determine proper crops to expand in a desirable environment on a productive surface as well as the

sowing technique to improve performance and also minimise expenses.

2. In, Transport: There is tremendous scope for AI in the transportation sector. In aircraft, ships, and spacecraft autopilot technique has been used to maintain the correct course. Another area is autonomous cars.
3. In, Healthcare: With the development of AI, the overall cost of healthcare would get reduced due to increased efficiency. With the ability of AI to handle large data speedily, it can help in making innovations, designing, and developing medical solutions and equipment.
4. In, Manufacturing: There are many Indian startups based on AI that are serving the manufacturing industry. Many companies have developed AI-based solutions including various kinds of robots to increase the growth of the manufacturing industry.
5. In, Education: AI can help increase the effectiveness of our instructors via numerous applications such as text translation systems, real-time message-to-speech, automating mundane and repeated jobs such as taking presence, automating grading etc.
6. In, Automated grading: On a large scale, Machine Learning methods such as NLP (Natural Language Processing) might be made use of for automated grading of assessments on systems such as E-PATHSHALA, SWAYAM, and DIKSHA. This is due to the draft of the National Education Policy 2020, which prioritises Internet understanding.

7. At, Home: We use devices that are based on AI all the time without knowing it. For example, we use OK GOOGLE or ALEXA or CORTANA all the time to perform various tasks with just voice commands.
8. In, Cyber Security: It is another vital field where AI is employed. Many organisations deal with a significant amount of data. For example, in the Banking sector or government organisations which are having a huge database of people's personal and private data, there is always a risk of stealing, and hence an AI-based security mechanism needs to be put in place.
9. In, Defence forces of India are now venturing into the products and technologies which will aid defence measures using the AI and technologies. (My Experience)
10. In India, corporates have started collaborating with academia on AI. IBM's Blue project is an example.
11. There are many startups in the country which are doing great work in image analytics, data analytics, predictive intelligence etc.
12. It is estimated that AI will add 957 billion dollars to India's GDP by the year 2035 boosting India's annual growth by 1.3% points.

Technology opens entirely new spheres and sectors for growth. It also opens up an entirely new paradigm of opportunities. With each wave of new technology, many new opportunities arise. New opportunities have always out-numbered the lost ones. Human ingenuity has always prevailed and it will continue to do so in the future. This optimism stems from my firm faith in Ancient Indian Thinking that blended

science and spirituality and found Harmony between the two for the greater good of mankind.

While we discuss AI, let also have no doubts that human creativity and Human emotions continue to be our greatest strength. They are our unique advantage over machines. the smartest of AI cannot solve mankind's problems without blending with our intellect and empathy. Thus, an immense need for the development of theories and practices to endorse AI and its applications is felt. Conferences like the present one are the ideal platforms to amalgamate scholars and their ideas, endeavours, and discoveries.

I'd like to congratulate Prof. N. K. Joshi, Vice Chancellor of Kumaun University and the convenor of this conference for the manifestation of this awaited academic event at the devbhumi Uttarakhand. You and your team have undertaken outstanding endeavours to make this conference a reality. I am sure that the discussions will help create an Action Roadmap for Responsible AI. A roadmap that can truly help transform lives and livelihoods across the world. My best wishes to you all.