

## Review

# Artificial Intelligence

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## INTRODUCTION

In the modern world, artificial intelligence has become very popular. Studying how the human brain learns, makes decisions, and works to solve issues is what artificial intelligence is all about. Intelligence in the areas of thinking, learning, problem-solving, belief, and language are the focus of artificial intelligence research.

### What is Artificial Intelligence?

When discussing developments in computer science that aid in the creation of smart systems, the term “artificial intelligence” (AI) is used interchangeably. [1] This model attempts to mimic human intellect but falls short in providing techniques that may be seen in a biological setting. [2] One definition of AI is a field that studies how to use computer models to solve issues from an analytical and algorithmic perspective. [3] The goal of Artificial Intelligence research is to imbue different computer systems with improved intelligence.

The founding principles, ideas, and experiments of illustrious scientists and researchers from bygone eras laid the groundwork for the modern field of artificial intelligence. [4] Numerous early innovations in areas such as electronics, engineering, mechanics, and many more significantly influenced AI. Several areas, such as language comprehension, memory association, comprehensive systems, etc., were the focus of the demonstrative programs developed. Tech companies have been able to create and deploy AI-based systems to solve real-world issues in the last century. Once just a theoretical concept, artificial intelligence (AI) is now being demonstrated in several industries. [5] Whether or whether computer systems can demonstrate intelligence has been a contentious topic throughout the history of AI. The notion of artificial intelligence (AI) emerged during this generation because of the role that contemporary logic played in the development of digital computers. [6] Reports of AI first surfaced in the 1950s. The general adoption and application to medicine at that time were hindered by numerous constraints. Many of these restrictions were removed with the introduction of Deep Learning in the early 2000s. Through risk assessment models, AI has the potential to improve diagnostic accuracy and workflow efficiency in clinical practice, thanks to its ability to analyze complicated algo-

rithms and self-learning. One major step forward in AI was DL, or deep learning. Deep Learning may be taught to automatically categorize data, unlike ML (Machine Learning), which relies on a predetermined set of attributes and requires human intervention. When it comes to processing images, one kind of Deep Learning algorithm that mimics the way the human brain's linked neurons function is the convolutional neural network (CNN). In order to identify patterns and generate targeted filters, an input picture is processed using many CNN layers. We now have access to well-known convolutional neural network (CNN) techniques such as Le-NET, AlexNet, VGG, GoogLeNet, and ResNet.

### Improving AI Over Time?

The fascinating traits of living things, such as intellect, may be traced back to Darwinian evolution, which has been much improved upon, according to molecular biology and evolutionary theory. Many in the artificial intelligence field hold the view that natural selection cannot produce intelligent machines. [7] The effectiveness of algorithms in addressing problems has seen significant advancements in the last 10 years. Even in the scientific and technical domains, algorithms may already provide outcomes that are competitive with human intellect. [8]

The use of AI in classrooms has expanded greatly within the past quarter of a century. A methodical strategy for AI development tailored to the academic market allowed the field to flourish. Primary emphasis on cross-curricular classroom activities, collaboration with diverse instructors and incorporation of their feedback, and domain-specific technology diversification. In order to help students stay connected to themselves, their communities, and their practices, aspirations, and accessible technology, we had to include them into their everyday lives.

### The Role of AI in Medical Devices

One of the most prominent subfields of computer science, artificial intelligence (AI) has the potential to improve people's lives in many ways. [9] When it comes to health, AI can do it all: detect, diagnose, and treat. Cancer, neurological disorders, cardiovascular disease, and

diabetes are among the many serious illnesses that make heavy use of AI in their treatment. AI has the ability to quickly and accurately detect issues that might endanger patients' lives. Currently, many patients' lives can be saved via machine learning, a branch of artificial intelligence.[10] With its cognitive powers, artificial intelligence has shown to be a potent instrument that enhances healthcare services via numerous analytical methodologies. Thanks to AI's steady improvement, it is now a useful tool in several branches of medicine, including oncology, neurology, and cardiology. Subfields of AI such as machine learning and deep learning deal with organized healthcare data, whereas NLP handles unstructured information, etc. the eleventh Many AI applications have been the subject of recent human-computer interaction research, which has led to the proposal of many principles for trustworthy and secure interaction. More partnerships with different medical departments and organizations may help these AI systems reach their full potential. When compared to human physicians, healthcare appliances equipped with AI can analyze medical picture data just as well.

### The Role of AI in Production and Manufacturing

[12]This generation's lightning-fast technological advancements in "Internet and AI" have sparked a sea shift in the manufacturing industry's whole ecosystem, upending long-established models and methods. Integrating AI with ICT, manufacturing, and other relevant fields is now being promoted as a means to promote intelligent production. Economic growth, national security, and technological advancement all stem from a country's manufacturing sector. in [13] Recently, AI has emerged as a key component in smart industrial manufacturing's race for greater speed and efficiency. The whole process now makes use of cutting-edge AI ideas like machine learning and deep neural networks to aid with diagnosis and predictive maintenance. Many see AI as a game-changing technology that will propel production in the industrial sector forward. Three main areas of production monitoring include the application of artificial intelligence: defect detection, useful life forecast, and quality inspection. applicable.[14] When it comes to production and manufacturing, artificial intelligence is making a big splash. The significant advancements in AI in recent years are a direct result of the many ongoing research projects all across the world. Prerequisites for AI adoption at the business level were under-discussed, with much of the discussion centered on the many forms AI may take. That is why many organizations are still having trouble incorporating AI into their manufacturing processes. Digital skills, business scale, and R&D intensity are important elements to consider when using AI in production.

### AI for Surveillance and Security

Due to their aim of employing AI technology to establish an ever-growing and trustworthy surveillance state, China is one of the first countries in this arena when it comes to artificial intelligence in security and surveillance.[15] A new kind of network authoritarianism was born from their hands. An actual experiment is taking place in Xinjiang, a region in western China; people living there do not have the freedom, liberty, or security that the rest of the country enjoys. A state-run monitoring system is gradually taking its place. In Mongolia, facial recognition software is seen as a crucial tool for

managing inmates in maximum security prisons. Sense Time is an innovative Chinese firm that aims to become the best in artificial intelligence and face recognition. [16] As a branch of AI, Deep Learning mimics the way humans learn new things. Closed circuit television (CCTV) has allowed for the detection of theft and the monitoring of numerous things, eliminating the requirement for human supervision that was previously required by all surveillance systems. Without the need for motion detectors, image processing can identify motion and theft. A strong focus on object recognition and analysis of all actions in real-time. [17] The industrial buildings are now seeing the acceleration of artificial intelligence. Due to its self-learning capabilities, the AI approach utilized in cyber-attacks seems to be fairly challenging. The cyber world is facing a big dilemma with AI. Cyberattacks facilitated by AI often use sophisticated malware with enhanced invasion tactics to breach system security.

Artificial Intelligence in the Classroom [18] Educational AI systems may benefit from the codes of ethics set forward by organizations like the International Society for Computing (ISC) and the Association for Computing Machinery (ACM). Aside from its obvious use in AI systems for teaching, it has broader potential applications in the advancement of many types of computer systems. We must be mindful that the use of AI in education carries with it unavoidable risks; hence, we must use humane and prudent standards when putting this technology into practice. [19] External and structural constraints on education systems have led to a lack of sociological thought within the subject of artificial intelligence in education, which is a serious worry. Consider the potential for abuse of the offered technology in an educational area where both resources and trained instructors are scarce: the introduction of AI systems for personalized learning. Putting these worries aside, AI also has its own set of advantages that build on themselves: As a result, the recruitment rate will rise and the burden of instructors would decrease. In [20], The field of educational technology is at the forefront of AI research, with researchers exploring ways to develop more conducive learning environments that can provide instructional approaches, different representations of provided learning materials, and a range of beginner support tools. These tools will be incredibly useful in the classroom. In recent times, online learning platforms such as Udemy,

Platforms like Coursera provide users a great deal of freedom as they study while simultaneously collecting and analyzing massive amounts of data. [21] The steady replacement of human workers with intelligent algorithms and robots is the greatest societal threat posed by artificial intelligence (AI) and will be exacerbated if AI-enabled systems achieve widespread success. Academics have been studying ways to incorporate AI into the classroom for over 30 years. In order to encourage the creation of user-friendly, adaptable, efficient, and comfortable learning environments and other educational resources.

### Artificial Intelligence Benefits

AI offers a number of benefits to education, including individualised lesson plans for students, intelligent tools to facilitate group work in the classroom, and personal assistants for instructors. [23] Reliability

and cost-effectiveness are two benefits that we get from AI. One use of artificial intelligence (AI) is the transformation of traffic sensors into smart agents capable of autonomously detecting accidents and providing valuable traffic status predictions. [24] To put it simply, AI can handle difficult and stressful tasks that people just can't handle. Machine learning algorithms can do tasks at a much higher rate of speed than humans. Properly implementing AI reduces the possibility of errors to virtually zero. [25] The Rather of being influenced by human emotions, artificial intelligence makes conclusions using facts. Workplace productivity is enhanced by AI-enabled devices since they do not need sleep. It is simpler to disseminate information inside AI itself. [26] Artificial intelligence approaches are now yielding good results for the fashion industry, thanks to their ability to handle diverse data sets with intricate interdependencies. The fashion industry's usage of artificial intelligence spans several domains, including but not limited to: design assistance systems, fashion suggestion systems, intelligent tracking systems, decision-making, socializing, e-

Some human occupations may be replaced by AI. A malfunctioning AI might act in a way that is counter to its intended purpose if it is not designed correctly.[27] There is a risk that AI may corrupt younger generations and lead to catastrophic disaster if it is mishandled. [28] A rise in the unemployment rate is a direct result of AI. AI is expensive and impersonal; it also takes a lot of effort to train. Any firm may become more reliant on technology with the help of AI.[29] In terms of reactions, AI isn't very creative, and when it breaks, it may cause all sorts of issues. In certain cases, AI just can't make sense of the reasoning and logic. [30] in Building AI-enabled machines is a labor-and expense-intensive process. The time and money needed to fix or modify an existing machine is high. Problems with unemployment are on the rise as a result of AI. The ability to form personal relationships is fundamental to effective team management, and machines just can't cut it. [31] The rise of AI is causing many professions to go across many sectors, and when applied to healthcare, it will inevitably fail to provide the personal touch and emotional intelligence that patients need.

## Conclusion

In my opinion, Artificial Intelligence is getting everywhere. Its application could be seen in Healthcare Industry, Manufacturing & Production, Fashion Technology, Education, Security and Surveillance, etc. And it continues to evolve as more research is being currently going on ArtificialIntelligence. AI has become the most trending topic of discussion when we talk about Computer Science in general. More companies are focusing on improving AI in their products and systems to overall make a better User Experience (UX). Whether it be Google Assistant or Siri or Alexa or any other virtual assistant all are based on the concept of Artificial Intelligence. AI assistance improved radiologists' performance in distinguishing coronavirus disease 2019 pneumonia from non- coronavirus disease 2019 pneumonia at chest CT (Computed Tomography). Nowadays even video games are using AI, which serves to improve game-player experience rather than machine learning or decision making. AI has a bright future ahead.

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