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The Impact of Artificial Intelligence (AI) on Society

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Abstract - The advent of artificial intelligence (AI), often known as the "fourth industrial revolution" (IR 4.0), will affect not just our day-to-day activities and social interactions, but also our understanding of who we are. Artificial intelligence, however, has a profound effect on the way we go about our daily lives and connect with one another. Keep an eye on the progress of AI to ensure that everyone can reap the benefits of this new kind of intelligence. This idea is linked to the concept that AI should display intelligent behaviour. Prior to this, only humans were allowed there. Artificial intelligence (AI) can act autonomously in a variety of contexts and solve complex issues without human intervention. The way people think about the development of artificial intelligence has changed drastically as a result. There are many facets of modern life in which artificial intelligence is rapidly progressing. There are many potential applications for artificial intelligence, including healthcare and the creation of game-changing technology like autonomous cars. There have been good and bad results from AI's entrance into society. The major purpose of this study is to examine the effects of AI on society and the difficulties AI faces.

Keywords - Impact, Artificial Intelligence, Society

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1. INTRODUCTION

Artificial intelligence (AI) has become a game-changing phenomenon in the contemporary era, altering whole sectors of the economy and even the fundamental nature of human life. AI's capacity to analyse large quantities of data, see patterns, and act independently has permanently altered our daily lives and the ways we do business and communicate with one another. A number of elements have come together to propel AI's meteoric ascent; they include increases in computing power, an increase in data availability, and significant developments in machine learning methods. Because of this synthesis, AI systems have emerged that surpass human performance on anything from image recognition to complicated decision-making. As a consequence, artificial intelligence is already being used in fields as diverse as medicine, finance, industry, and even the arts.[1]

The influence of AI in altering businesses and economics is one of the most noticeable effects of AI on society. Businesses have been able to simplify procedures, save costs, and provide higher-quality goods and services thanks to automation fueled by artificial intelligence. However, as everyday jobs grow amenable to being handled by robots, increased automation has also prompted worries about job displacement. Upskilling and retraining programmes are a continuous social concern because of the continual transition in the workforce towards more creative, strategic, and interpersonal jobs. Artificial intelligence has prompted significant shifts in how we use technology and relate to one another outside of the monetary sphere. The development of virtual assistants and chatbots based on natural language processing has revolutionised the way we access information and interact with one another. The boundary between individual desire and algorithmic impact is frequently blurred by AI-driven recommendation systems, which affect everything from the information we read to the goods we buy. Privacy, autonomy, and the possibility for prejudice and manipulation are only some of the ethical concerns that arise when considering the possible influence of AI on human ideas, behaviours, and views.[2]

Artificial intelligence has enabled groundbreaking developments in healthcare, particularly in the areas of illness detection, medication discovery, and individual treatment programmes. X-rays and magnetic resonance imaging scans are only two examples of the types of medical pictures that may be analysed by machine learning algorithms to help in early detection and accurate diagnosis. Using AI for predictive analytics shows promise in detecting epidemics, tracing their progress, and determining where to best direct limited healthcare resources. Widespread use of AI also raises a variety of moral concerns. Many AI systems' algorithms are "black boxes," making it impossible to understand the reasoning behind their judgements. The data used to train AI models might introduce biases and preconceptions that will persist in the system. To find a middle ground between inventiveness and AI

accountability, we need open communication, strong rules, and cross-disciplinary efforts.[3]

As AI develops further, fundamental philosophical concerns concerning the nature of mind, intelligence, and the limits of human potential arise. The pursuit of artificial general intelligence (AGI) challenges the limits of scientific inquiry and creative thought because of the breadth of disciplines in which such intelligence might be useful. While the eventual arrival of artificial general intelligence (AGI) is still up in the air, discussions regarding the ethical, legal, and existential hazards associated with its development have already begun to heat up.

1.1 Definition of Artificial Intelligence (AI)

"Artificial Intelligence" (AI) is the emulation of human intelligence by machines. Artificial intelligence (AI) is the study and implementation of algorithms, programmes, and hardware that mimic human intellect in areas such as problem solving, decision making, language comprehension, learning, and perception. Artificial intelligence (AI) systems may replicate many human cognitive abilities, including the ability to learn, adapt to new situations, and improve over time. Machine learning, which allows computers to learn from and make predictions or decisions based on data; natural language processing (NLP), which allows computers to understand and interact with human language; computer vision, which allows computers to interpret and understand visual information from the world; and robotics, which involves creating physical machines capable of performing tasks autonomously or semi-autonomously, are all subfields of artificial intelligence.[4]

A broad or strong AI would have human-like intellect and the capacity to execute a wide range of activities at human-level skill, whereas narrow or weak AI is intended to accomplish specialised tasks and is restricted in its capabilities. Significant progress has been made in certain forms of AI, but we have not yet developed general AI as of my most recent knowledge update in September 2021. Artificial intelligence (AI) has many potential uses in many fields, including medicine, business, transportation, the arts, academia, and more. The potential for technology to automate mundane activities, increase productivity, and open up new avenues of exploration that were previously impossible with conventional computers is staggering.

1.2 Brief history and development of AI

The intriguing voyage of AI's evolution may be traced back to the middle of the 20th century. In the 1950s, the notion of artificial intelligence (AI) arose with the aim of developing robots that might mimic human intellect. Alan Turing and other early pioneers set the theoretical framework by presenting the "Turing Test," which sought to assess whether or not a computer could demonstrate human-like behaviour indistinguishable from that of a person. Significant progress was made in the fields of problem solving, language translation, and logic-based thinking by artificial intelligence researchers in the 1950s and 1960s.[5]

Limitations in computer power and overly high predictions of AI's capabilities hindered progress in the 1970s. During this time, which became known as the "AI winter," both interest in and support for AI research suffered. However, the 1980s saw a resurgence of interest in AI because to the introduction of expert systems, which made it possible to apply AI's specialised expertise in a variety of fields.[6]

Major advances were made in the 1990s, especially in the fields of machine learning and neural networks. Larger datasets and more powerful computers have enabled this renaissance in artificial intelligence. Innovations like deep learning in AI systems have allowed them to process and analyse massive volumes of data, accelerating progress in the area and reshaping how we approach tasks like computer vision, natural language processing, and voice recognition in the 21st century. We have seen remarkable applications like driverless cars, virtual assistants, and complex recommendation systems emerge as tech titans and academic institutions poured millions into AI research. As a result of AI's practical uses, our everyday lives and professions have been revolutionised.

Artificial intelligence has progressed through waves of innovation, stagnation, and revival. Rapid progress has been made in AI recently, with a focus on ethics, openness, and responsible use of the technology. However, the ethical, cultural, and economic concerns that come along with the great power and capabilities of AI need constant attention on the part of those responsible for the field's progress.[7]

2. LITERATURE REVIEW

Prasad J. (2018) A Study Using Artificial Intelligence, published by Springer. The authors provide a thorough introduction to the learning processes by explaining how one can hone one's abilities through training and instruction, amass information through research and reading, make sense of all this data by creating representations, and make discoveries through experimentation and observation that can then be formalised into theories. Researchers in the field of artificial intelligence still face the exciting task of embedding such learning capabilities into machines and computers. Authors underline how laborious and sluggish human learning is in comparison to machine learning. Because of this, researchers in the field of machine learning are always on the lookout for new methods to make computers learn and so make up for the shortcomings of human learners.[8]

Wayne D. (2017) As a result, the field of artificial intelligence (AI) has come to accept information-processing skills as "intelligence" and its primary scientific aim, which will allow for the creation of intelligent computers with the ability to mimic human and animal intelligence. The author identifies the following as some of the most important areas where AI has been put to use: natural language processing (NLP) with contextual referencing and inference; intelligent database information retrieval (IDR) with deductive intelligence; expert consultative systems (ECSs) that would deploy rule-based conclusions; mathematical theorem proving; robotics (AI) that mimics tasks that humans manage unconsciously; automatic programming (AP) with verification and debugging; and CGI (artificial general intelligence).[9]

Agrawal A. (2015) Intelligent machines. Concerns of an AI Pioneer" expresses apprehension about the future of AI in light of the massive influx of cash after essentially nonexistent support for this study area in the 1970s and 1980s. University of California computer scientist Stuart Russell is a leading advocate of the AI being anti-human, claiming that AI is just as lethal as nuclear weapons. Russell worries that the rise of AI may one day grow so advanced that it would be responsible for the demise of humanity. He warns that giving AI-enabled systems control of weapons and drones is a bad idea.[10]

Kennedy J C. (2020) Implications of AI's fast progress and uses may be felt across all the major economies and societies. According to research conducted jointly by NASSCOM and Ernst & Young, about 46% of today's workforce will be doing tasks that need vastly different skill sets or entirely new tasks that do not yet exist by 2022. If nations don't move quickly to establish and implement an AI strategy and action plan for building an AI ecosystem, they risk falling further and farther behind those who are driving and pushing the present momentum for fast change in society and the economy. Therefore, it is crucial that we establish a policy framework that would make India a thriving hub for artificial intelligence. [11]

Bolton R N., Kennedy J C. (2018) The authors of "Applications of AI in Intelligent Manufacturing: a Review," give an alternative, no less intriguing viewpoint, by demonstrating how AI and the internet may be used together to facilitate intelligent production. An intelligent manufacturing system combines artificial intelligence (AI) with the internet to create a potent brew of these ingredients: cooperation; cognition; connectivity; sensing; analysis; learning; control; and execution of material; environment; information; machine; and human. According to the authors, the advent of this new age of artificial intelligence and the internet has prompted a profound transformation across the whole production environment.[12]

3. OBJECTIVES OF THE STUDY

- To learn about artificial intelligence.
- To determine the effects of artificial intelligence on society, both good and bad.
- To investigate the difficulties brought on by artificial intelligence.
- To conduct a SWOT analysis of artificial intelligence.

4. METHODOLOGY

The research relies on previously collected information from other sources. Journals, papers, and books are the primary sources of information.

4.1 Positive and Negative Impact of Artificial Intelligence

There have been immediate, intermediate, and lasting cultural effects from the spread of this artificial intelligence technology. Professionals who are used to working with modern technologies, lawyers who are encouraging AI's influence with its regulatory implications, and technocrats who frequently use the aid of modern technology to arrive at a precise decision in a technological matter that is complex have all been affected by the advent of AI in society.

i. Positive Impacts

- **Fast and accurate diagnostics:** Artificial intelligence may also provide doctors with a menu of treatment plans from which to choose. Generally speaking, the procedure goes like this: The digital results of the physical examination are entered into a computer, which then considers all of the possibilities, automatically diagnoses if the patient suffers from certain deficiencies and sickness, and even recommends various treatment options that are available.
- **Socially therapeutic robots:** Having a pet may improve the quality of life for seniors in several ways, including lowering blood pressure, alleviating anxiety and loneliness, and increasing interaction with others. It has lately been popular to propose giving elderly people who live alone cybernetic companions that can do things like help with housekeeping. Therapeutic robots and socially assistive robot technologies may enhance the quality of life for the elderly and those with physical limitations.

- **Reduce errors related to human fatigue:** Human error is inevitable and sometimes highly costly; the potential for error grows in direct proportion to the degree of weariness that person is feeling. In contrast, the AI is not prone to mental fatigue or distraction due to strong emotions. There is no room for mistake, and the work can be done more swiftly and precisely.

- **Artificial intelligence based surgical contribution:** Individuals may now choose for surgical procedures aided by artificial intelligence if they so want. The patient is far less likely to be harmed by this AI, even though it still has to be operated by skilled medical professionals. Most modern hospitals now have access to the da Vinci surgical system, a kind of robotic technology. Surgeons may perform procedures on patients utilising minimally invasive technologies. The use of such technologies allows for a degree of accuracy and precision that is unattainable via human processes. Less intrusive procedures result in less pain, less blood loss, and less stress for the individuals undergoing them.

- **Improved radiology:** Prenatal imaging, cardiac magnetic resonance imaging, and whole body magnetic resonance imaging all become commonplace by the turn of the millennium. The search for improved algorithms to diagnose certain illnesses and interpret scan results continues. The development of artificial intelligence has allowed for all of these successes.

- **Virtual presence:** Technology advancements in virtual presence have made remote diagnosis of illnesses feasible. Patients don't have to get out of bed for this since physicians are able to do remote checks using a robot that acts as a "presence" in the room. The interaction and motion of the medical staff is almost comparable to what would happen if they were really there. Because of this capacity, doctors can reach patients who are homebound.

ii. Negative Impact

- The way we now organise our social lives will be severely challenged by a forthcoming big societal shift. Humans need to toil hard to survive, but with AI, we can instruct a computer to do a task without lifting a finger. Human connection will inevitably decline as the requirement for interpersonal interaction to share ideas is eventually replaced by artificial intelligence. Artificial intelligence will fill the void left by the decline in the importance of face-to-face meetings.

- Unemployment rates will rise as computers take over many formerly human-held positions. Machines and robots have replaced human labour on many production lines for motor vehicles nowadays. As digital gadgets become more affordable and widespread, even grocery workers may become obsolete. The automation of procedures is the primary focus of AI research. The loss of jobs is a key consequence of AI. For the last decade, people have made money by hard work and saving their spare time. It will be crucial in the battle against automation that takes employment from humans that we see a future in which people are compensated just for being citizens as technology improves and sophisticated robots are made.

- Wealth inequality will be created as a direct consequence of AI investors accumulating the bulk of the earnings. There will be a widening gap between the rich and the poor. Increased visibility of the "M" shaped distribution of wealth.

- The AI is being taught and learned to accomplish the given work, and it may ultimately take off to the point where humans have no control, leading to unanticipated difficulties and ramifications. This raises new worries not just in terms of society, but also in terms of AI itself. When an AI has all the code it needs, it can function without further direction from its human masters.

- Humans developing AI run the risk of making it biassed towards specific groups or too focused on the developers' own interests. For example, the UN has decided to limit the proliferation of nuclear power out of concern that it would be used arbitrarily to wipe out whole populations or to subjugate certain people groups. If AI is trained to destroy a certain group of people or an item in particular, it might cause a worldwide catastrophe.

4.2 Impact of Artificial Intelligence on the Society as a whole

- **Impact of Artificial Intelligence on Ecological Studies (Environment):** Given the scale of the problem and the amount of work involved, there has always been a need for resources that can promote ecological thinking rather than just assist the collecting and analysis of data. Artificial intelligence (AI)-derived models and methodology have changed both basic and practical studies of ecology, greatly

contributing to the development of the subject as a whole. To combat the seeming inability to organise and analyse comprehensive ecological information, boost overall process efficiency, and find solutions to problems with data collection, ecologists are turning to artificial intelligence.

- **Impact of Artificial Intelligence on Agriculture:** Harvesting, aerial surveillance, remote sensing, proximity sensing, pest and weed management, advisory services, and many more applications may all benefit from artificial intelligence. Currently, Microsoft is advising 175 farmers in Andhra Pradesh, India, on matters such as sowing and fertiliser use. The average yield per hectare increased by 30 percent as a consequence of this endeavour compared to the previous year. Artificial intelligence (AI) that mimics human cognition has enabled harvest technologies like Harvest Croo to develop a fully automated fruit picking system.

- **Impact of Artificial Intelligence on Government:** The development of AI is quickly becoming one of humanity's greatest assets. Similarly, it is advantageous to any country's administration and plays a significant part in our everyday lives. According to a survey, AI is capable of reducing administrative burdens and assisting in the resolution of resource allocation issues. Further AI breakthroughs may be considered as a means to influencing the future of any economy in an age of current technologies that demand vast data—According to Accenture, AI has the ability to quadruple economic growth rates by 2035. However, every proper technique comes at a cost. Concerns about privacy, the rapid adoption of digital tools, and the limits of human cooperation and the pace at which humans operate machinery all arise when discussing the use of AI in the public sector.

- **Impact of Artificial Intelligence on Education:** By 2025, AI is expected to create more jobs than it eliminates, according to experts, although these new positions will be more technically demanding. As new skills arise, governments, educational institutions, and companies should evaluate how to most effectively construct learning programmes that equip individuals with the abilities required to compete in the contemporary economy. As a consequence, educational institutions will need to educate students for professions in the sectors. There has to be more research into the emerging teaching jobs that call for a different skill set among graduates, one that places a premium on imagination, originality, and innovation—qualities that are difficult, if not impossible, to replicate in a machine.

- **Impact of Artificial Intelligence on Innovation:** There are aspects of artificial intelligence that may help improve economic efficiency. In addition, it has the potential to contribute more broadly to the "innovation" of the market. The manufacturing sector and a broad variety of industries stand to benefit from these developments. Take "atomwise," a startup that employs neural networks to visualise the bioactivity of individual molecules in order to identify potential medication candidates. Two perspectives on the role of artificial intelligence in innovative sectors are shown by the case of Atomwise.

- **Impact of Artificial Intelligence on Military and Defence:** Nearly every military operation now makes use of some kind of artificial intelligence, and military research institutions are under pressure to increase spending on R&D in order to keep up with the need for ever more sophisticated AI. The present state of AI has great promise for the protection of nations. Some potential applications where the present level of machine learning technology's automated capabilities might be very useful are satellite images analysis and cyber protection.

- **Impact of Artificial Intelligence in Healthcare and Medicine:** Healthcare staff' ability to understand patient behaviours and needs is enhanced by artificial intelligence. To help maintain tabs on patients and their medical appointments, a company called Sensely developed a virtual nurse they dubbed "Molly."

- **Impact of Artificial Intelligence on Labour Market:** Concerns have been raised concerning the potential effects of AI on the job economy. Half of the experts polled by the Pew Research Centre predict that artificial intelligence will eliminate more employment than it creates by the year 2025, while the other half have the opposite view.

- **Impact of Artificial Intelligence on Manufacturing Industry:** Industrial AI is a methodical field that aims to improve industrial performance via the development, testing, and implementation of a wide range of machine learning algorithms. It bridges the gap between AI researchers in the academy and those working in industry by providing answers to real-world problems.

5. SWOT ANALYSIS OF ARTIFICIAL INTELLIGENCE

Strategic shifts in all four areas of control, vulnerability, opportunities, and threats make up the whole effect of this analysis.

5.1 Strengths

Every company stands to benefit from this. Businesses may save money by replacing human labour with automated processes. The cost of operations and the price of noncompliance are both lowered.

- Many companies began using it, too.
- Enhanced standard of living.
- Improve efficiency in the workplace.

5.2 Weaknesses

There are limits to AI. It may be helpful, but it shouldn't be relied on solely. Artificial intelligence can have conversations, but it can't show emotions. So although it may use what it knows, it won't be able to understand or react to nuanced human emotions.

- There is no way to make AI more humane.
- The possibility of fooling us.
- The government moves at a glacial pace.

5.3 Opportunities

This paves the way for quicker troubleshooting, which might have implications for fields like customer service.

- Joining artificial intelligence with cutting-edge electronics.
- Disabled persons are able to go about with the aid of smart automobiles.
- Less anxiety amongst workers.

5.4 Threats

Instead of being conquered by AI, humanity will have to learn to live with it.

- It's a kind of job theft.
- Being powerless in the face of AI.
- The AI made the wrong choice.

6. FINDINGS OF THE STUDY

- Artificial intelligence is also used for fraud detection in financial systems. Artificial intelligence may help identify anomalies, outliers, or incidents of possible fraud in large organisations.
- It claims to raise output, improve happiness, and help solve global challenges including climate change, resource depletion, and health concerns.
- Artificial intelligence (AI) makes people's lives better by powering applications and services that facilitate regular activities like making and receiving phone calls, sending and receiving emails, and using ride-sharing services.

7. CONCLUSION

AI is at the centre of a brand-new effort to model intelligence computationally. The underlying idea is that any kind of intelligence, human or another, may be represented in a digital computer using a system of symbols and a set of operations on those symbols. Researchers in artificial intelligence don't have to wait for the hypothetical machine that could mimic every aspect of human intelligence or for the resolution of the debate over whether such a computer would actually be a mind or would merely simulate one. In a select few areas, such as the diagnosis of illnesses in soybean plants, AI systems may outperform humans. These areas include problem solving, making conclusions, learning, and language understanding.

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