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Artificial Intelligence

Vinita Veerani[1], Vijay Singh[2], Shikha Tiwari[3]

[1]*Amity Institute of Information Technology, Amity University Raipur, Raipur, Chhattisgarh, India*
vinita.veerani@s.amity.edu
[2] *Amity Institute of Information Technology, Amity University Raipur, Raipur, Chhattisgarh, India*
vijay.singh@s.amity.edu
[3] *Faculty of Amity Institute of Information Technology, Amity University Raipur, Raipur, Chhattisgarh, India*
Stiwari@rpr.amity.edu

Abstract - Artificial intelligence (AI) has the potential to revolutionize healthcare, education, entertainment, and security. However, it also brings risks. This paper explores the emerging age of AI [1], benefits in different fields [4] [6], negative impacts [2], including privacy violations, ethical dilemmas [7], job reduction [3], creativity loss, and social isolation [9]. To address these concerns, we propose solutions such as privacy protection, ethical guidelines, reskilling programs [8], fostering creativity, and promoting social connections alongside AI integration [5], and some latest aspects of AI [10]. It is crucial to ensure that AI is utilized responsibly for the benefit of humanity.

***Key Words*:** AI, benefits of AI, negative impact, and latest researches of AI etc...

1.INTRODUCTION

Artificial intelligence (AI) refers to the capacity of machines or systems to perform tasks that typically require human intelligence, including reasoning, learning, decision-making, and problem-solving. The rapid advancement of AI in recent years can be attributed to factors such as the availability of large datasets, powerful computing resources, and sophisticated algorithms. AI has found applications across various industries, including medicine, education, entertainment, finance, and security, offering innovative solutions and enhancing efficiency and quality.

However, it is important to recognize that AI is not a one-size-fits-all solution and comes with its own set of risks and challenges. These challenges need to be carefully considered and addressed. Some of the potential negative impacts of AI on our daily lives include concerns related to privacy infringement, ethical implications, potential job displacement, limitations on creativity, and potential isolation from social interactions. These impacts can have implications for our overall well-being, dignity, autonomy, and fundamental human rights. It is crucial to navigate these challenges and ensure that the development and deployment of AI prioritize responsible and ethical practices to maximize the benefits while minimizing the potential risks.

The emergence of Artificial Intelligence (AI) can be traced back to the mid-20th century, with the coining of the term at the Dartmouth Conference in 1956. AI initially aimed to develop machines capable of performing tasks that would typically require human intelligence. Over the years, researchers from various disciplines contributed to its evolution, leading to significant breakthroughs and advancements. From early AI programs like the Logic Theorist and ELIZA to modern language models like GPT-3, AI has progressively become more sophisticated and capable, transforming industries and shaping our daily lives. The emergence of AI has opened up new possibilities and challenges, paving the way for a future where intelligent machines are integrated into various aspects of society.

Fig – 1: Artificial Intelligence

Machine learning, deep learning, cognitive computing, and computer vision are all key components of artificial intelligence (AI). Machine learning enables computers to learn and make predictions from data, while deep learning utilizes artificial neural networks to mimic the structure of the brain. Cognitive computing aims to replicate human thought processes, and computer vision interprets visual content. These technologies have applications in various industries, including healthcare. However, it's important to consider the potential negative impacts of AI, such as job displacement, and ensure responsible and ethical practices in its development and deployment.

2. The emergence of AI

The rise of Artificial Intelligence (AI) has brought about transformative applications that significantly influence our lives. Despite being a relatively young technology, with the term "AI" coined in 1956 at the Dartmouth conference, progress in the field over the past six decades has been sporadic and unpredictable. This can be attributed to AI being a multidisciplinary field lacking strong foundational theories. AI software paradigms and techniques have emerged from various disciplines such as Cognitive Science, Psychology, Logic, and others.

The timeline of key milestones in artificial intelligence (AI) showcases its evolution and impact. It started in 1956 with the Dartmouth Conference, where the term "artificial intelligence" was first introduced. In subsequent years, significant contributions followed, including John McCarthy's foundational paper on AI in 1957 and Marvin Minsky and Dean Edmonds' creation of the Logic Theorist, an early AI program, in 1958. Joseph Weinbaum's development of ELIZA, a chatbot simulating human conversation, took place in 1966, while McCarthy and Hayes explored philosophical problems of AI in 1969. McCarthy's 1973 paper, "Artificial Intelligence: A Modern Approach," further influenced the field. In 1980, Terry Winograd's SHRDLU demonstrated natural language processing capabilities. Recent breakthroughs include OpenAI's Five defeating professional Dota 2 players in 2016 and the releases of GPT-2 in 2018 and GPT-3 in 2020, marking advancements in language models. These milestones collectively illustrate the progress of AI over time.

3. Some Benefits of AI Includes

Artificial intelligence (AI) is revolutionizing machine-enabled capabilities, pushing boundaries and enabling machines to operate autonomously, leading to efficient execution of repetitive tasks. AI fosters the development of an advanced workplace that promotes seamless collaboration between enterprise systems and individuals. As a result, human resources are not rendered obsolete; instead, their efforts are enhanced by emerging technologies. In fact, AI empowers organizations to allocate resources to more complex tasks, elevating their productivity and effectiveness.

Fig – 2: Benefits of AI

3.1 Enhanced decision-making

Artificial Intelligence (AI) enables the analysis of vast datasets, revealing intricate patterns that may be challenging for humans to discern. This wealth of information empowers improved decision-making across various domains, spanning from product development to financial investments.

3.2 Safer transportation

AI can be used to develop self-driving cars and other transportation systems that are safer than human-driven vehicles.

3.3 Superior customer service

By leveraging AI-powered solutions, businesses can deliver tailored experiences to their customers, thereby enhancing satisfaction levels.

3.4 Manufacturing

AI plays a crucial role in automating manufacturing processes, enabling predictive maintenance, and enhancing quality control. This leads to increased productivity and cost reduction in the manufacturing industry.

3.5 Education:

AI is being integrated into educational platforms, empowering personalized learning experiences, intelligent tutoring, and aiding teachers in delivering customized educational content.

3.6 Cybersecurity:

The application of AI in cybersecurity enables the detection and prevention of cyber threats. It helps identify patterns of malicious activities, fortify network security, and safeguard sensitive information.

3.7 Entertainment:

AI is revolutionizing the entertainment industry through content recommendation systems, virtual reality, and augmented reality applications. These AI-driven technologies offer users personalized and immersive experiences, transforming the way entertainment is consumed and enjoyed.

3.8 Object Detection:

There are various AI online tools available which helps in detecting object in computer vision field such as make senseai, the tool is helpful in image annotation and create bounding boxes that makes detection of any object easier [4].

4. Working of AI

There is a common misconception that artificial intelligence (AI) is limited to robots and self-driving cars, but its practical applications go far beyond that. One crucial use of AI is in analyzing vast amounts of data generated daily. By strategically applying AI, we can gather insights and automate tasks at an unprecedented speed and scale. AI systems can efficiently search through massive data sets, deciphering both text and images to uncover complex patterns and take appropriate actions based on their findings. Advanced technologies enable computer systems to comprehend human language, learn from experience, and make predictions. AI encompasses various subfields that contribute to its capabilities and advancements.

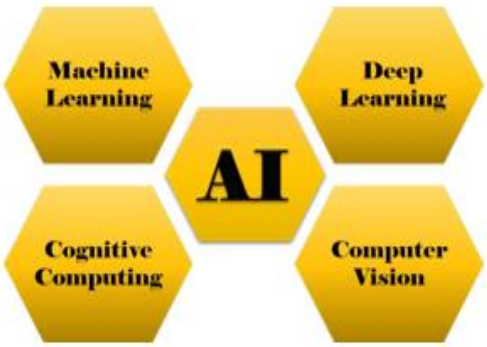

Fig – 3: Working of AI

4.1 Machine Learning

Machine learning, also known as ML, is an application of artificial intelligence (AI) that enables computers to learn and adapt from experience without the need for explicit programming. The main objective of machine learning is to develop algorithms capable of analyzing data and making predictions. This technology has found valuable applications in various industries, including healthcare, pharmaceuticals, and life sciences, where it has proven beneficial in enhancing illness detection, medical image interpretation, and drug development processes.

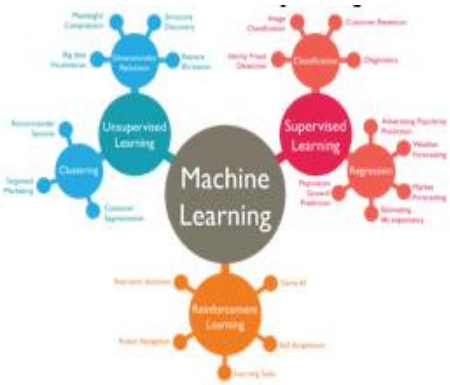

Fig – 4: Machine learning

4.2 Deep learning

Deep learning is a subset of machine learning that utilizes artificial neural networks inspired by the structure of the brain. These networks collaborate across multiple layers to process inputs, such as detecting facial pictures from mosaic tiles. Through positive and negative reinforcement, machines learn and improve their performance over time.

4.3 Cognitive computing

Cognitive computing enhances human-machine interaction in artificial intelligence (AI) by replicating human thought processes. It focuses on understanding language and interpreting images. Deep learning, such as speech recognition, enables voice assistants to comprehend and respond to user queries, advancing the goal of creating machines with human-like behaviors and cognitive abilities.

Fig- 5: Cognitive computing

4.4 Computer version

Computer vision, a branch of artificial intelligence, utilizes deep learning and pattern recognition to interpret visual content such as images, graphs, and videos. Its applications are transforming sectors like healthcare, where it aids in faster and more accurate diagnosis by analyzing patients' x-ray images.

5. Negative impacts of AI

We're on the fence about this one, but it's probably fair to include it because it's a common argument against the use of AI.

Some uses of AI are unlikely to impact human jobs. For example, the image processing AI in new cars which allows for automatic braking in the event of a potential crash. That's not replacing a job.

An AI-powered robot assembling those cars in the factory, that probably is taking the place of a human. The important point to keep in mind is that AI in its current iteration is aiming to replace dangerous and repetitive work. That frees up human workers to do work which offers more ability for creative thinking, which is likely to be more fulfilling.

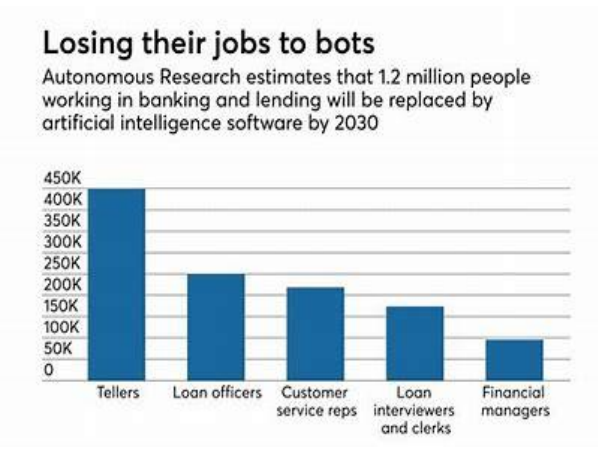

Fig – 6: Dark side of AI

AI technology is also going to allow for the invention and many aids which will help workers be more efficient in the work that they do. All in all, we believe that AI is a positive for the human workforce in the long run, but that's not to say there won't be some growing pains in between.

6. How can we mitigate the negative effects of AI on employment and income?

There are different ways to mitigate the negative effects of AI on employment and income –

6.1 Invest in reskilling and upskilling:

As AI technology advances, workers must adapt and acquire new skills to maintain their competitiveness in the job market. This adaptation may require individuals to pursue additional courses or degrees to stay abreast of the evolving demands of various industries influenced by AI.

6.2 Encourage lifelong learning:

In an increasingly automated world, it will be essential for workers to stay up to date with the latest developments in their field. This may involve engaging in continuous learning opportunities, such as online courses, webinars, podcasts, or mentoring programs.

6.3 Support income and social protection

Supporting income and social protection is crucial to address the potential consequences of AI on employment and income. In instances where AI displaces workers or leads to reduced income, it is necessary to ensure that affected individuals receive sufficient income support and have access to social protection measures. This could involve implementing policies that expand existing safety nets or introduce new mechanisms to provide financial assistance and support to those impacted by AI-related changes in the job market.

6.4 Promote inclusive and sustainable growth:

As AI may create new jobs and industries, it will be important to ensure that these opportunities are accessible and fair for all workers. This may involve promoting diversity and inclusion in AI development and deployment, ensuring labor rights and standards, fostering social dialogue and participation, and addressing the environmental and ethical impacts of AI.

7. The social & Economic impacts of AI:

AI can have both positive and negative effects on society and the economy.

a. Some of the positive effects include:

1. Increasing productivity and efficiency.
2. Enhancing innovation and creativity.
3. Improving health care and education.
4. Solving complex problems and challenges.
5. Creating new jobs and industries.

b. Some of the negative effects include:

1. Reducing employment and income for some workers.
2. Widening inequality and polarization.
3. Raising ethical and moral dilemmas.
4. Threatening privacy and security.
5. Disrupting social and cultural norms.

The impact of AI may vary depending on the level of development, adoption, and regulation of AI in different countries, sectors, and domains. Some countries may benefit more from AI than others, depending on their comparative advantages, human capital, infrastructure, and governance. Some sectors may be more affected by AI than others, depending on their degree of automation, digitization, and innovation. Some domains may be more sensitive to AI than others, depending on their ethical, legal, and social implications. Therefore, the social and economic impacts of AI are not uniform or deterministic, but rather contingent and dynamic.

8. Some latest researches on AI:

8.1 Researchers at the University of Technology Sydney have developed biosensor technology that enables devices like robots to be controlled solely through thought. This advancement in mind-control technology brings the possibility of controlling machines through the power of the mind.

8.2 Scientists at the Max Planck Institute for Intelligent Systems have achieved a breakthrough in the field of soft robotics by creating fully biodegradable artificial muscles. This development aligns with the growing trend of green technology and paves the way for sustainable advancements in robotics.

8.3 Engineers from the University of Waterloo have developed an in-home AI tool that leverages artificial intelligence and wireless technology to monitor the health of elderly residents. This unobtrusive monitoring system aims to detect emerging health problems early on, enhancing the overall well-being and care of elderly individuals.

8.4 Student researchers at the Georgia Institute of Technology are exploring the impact of intentional robot deception on trust. They are studying the effectiveness of apologies given by robots after engaging in deceptive behavior, shedding light on the ethical implications of robots lying and its consequences on human-robot interactions.

8.5 Researchers at Tohoku University have made progress in molecular robotics by developing multi-compartment membranes for multicellular robots. These robots derive their form and functionality from assembled molecules stored in a body, mimicking complex living organisms.

8.6 In a massive crowd-sourced study involving 327 co-authors from 186 institutions across 14 countries, it was found that ChatGPT, an AI language model, scored lower than students on accounting assessments. Students outperformed ChatGPT with an overall average score of 76.7%, highlighting the AI's limitations in certain areas of accounting.

8.7 Researchers at TU Wien (Vienna) have developed an artificial intelligence system that can suggest appropriate treatment steps for cases of blood poisoning in intensive care units. The AI system has already surpassed human performance in this aspect, demonstrating its potential in improving medical care.

8.8 Engineers at the University of Waterloo have discovered a new method to program robots for assisting people with dementia in locating lost objects such as medicine, glasses, and phones. This development holds promise in enhancing the independence and daily lives of individuals with dementia.

8.9 A research analysis conducted at Carnegie Mellon University explores the concept of robot rights. The analysis concludes that granting rights to robots is not a favorable idea, suggesting alternative perspectives rooted in Confucianism when considering the ethical implications of robot-human interactions.

9. CONCLUSION

Artificial intelligence (AI) is having a widespread impact on businesses, contributing to the betterment of humanity. It serves as a key driving force behind the development of technologies such as big data, robots, and the Internet of Things, and this trend is expected to continue in the near future. Various industries, including banking, healthcare, information technology, and data science, have embraced AI to measure progress and tackle complex business challenges. The evident utilization of AI in these sectors suggests a promising future for this technology. The growth of AI in business is influenced by both technological advancements and the increasing digitization of society, creating a favorable environment for its expansion and adoption.

REFERENCES

[1] Darlington, K. The Essence of Expert Systems. Pearson Education, 2000.

[2] Lenat, D. and Guha, D. Building Large Knowledge Based Systems. Addison Wesley. 1991.

[3] Winograd, T. Understanding Natural Language, Academic Press, 1972

[4] Shikha Tiwari YOLOv5 based Drone Detection and Identification,
Neuro Quantology | November 2022 | Volume 20 | Issue 13 | Page 2559-2563 | doi: 10.14704/nq.2022.20.13.NQ88318 Shikha Tiwari/ YOLOv5 Based Drone Detection and Identification

[5] Newall, A., & Simon, H. A. Human problem solving. Englewood Cliffs, N. J.: Prentice-Hall, 1971.

[6] Baber Walter F., n.d. THE ARTS OF THE NATURAL: HERBERT SIMON AND ARTIFICAL INTELLIGENCE.

[7] Fahimi S. Y., Powell Ryan., 2018. Al-Enabled Retail

[8] D. Cope Computers and Musical Style

[9] P. Langley, H.A. Simon, G.L. Bradshaw, J.M., Scientific Discovery: Computational Explorations of the Creative Process, MIT Press, Cambridge, MA, 1987.

[10] D.B. Lenat, The role of heuristics in learning by discovery: three case studies, in: R.S. Michalski, J.G. Carbonell, T.M. Mitchell (Eds.), Machine Learning: An Artificial Intelligence Approach, Tioga, Palo Alto, CA, 1983, pp. 243-306.