A comprehensive Study on Impacts of Artificial Intelligence on Various Sectors of Society

Diya Goyal
Amity Institute of Information and Technology
Amity University Chhattisgarh
Raipur, Chhattisgarh

Arshiya Kherani
Amity Institute of Information and Technology
Amity University Chhattisgarh
Raipur, Chhattisgarh

Dr. Goldi Soni
Amity Institute of Information and Technology
Amity University Chhattisgarh
Raipur, Chhattisgarh

Abstract— Based on existing research methods, this paper relies on the concept of artificial intelligence and its impact on industrial and employment fields, education sector and most importantly on the society. The research is done by qualitative and quantitative analysis of the data and statistics which gives an impression about how drastically Artificial Intelligence has made widespread ease and convenience along with some unpredictable pitfalls. Artificial intelligence has undoubtedly overcome the flaws in education system by improving teaching quality especially for disabled students but also played a negative role in employment sector leading to income inequality. Thus, the paper delves into the broader view of advantage of Artificial intelligence in advancing healthcare, safety and automation along with negativity of job replacements, privacy and safety concerns.

Keywords—Artificial Intelligence; Economy; Covid19; Chatbots; Unemployment; Education.

I. INTRODUCTION

The creation of computer systems that are capable of carrying out tasks that ordinarily require human intelligence is known as artificial intelligence (AI). These tasks include comprehending natural language, identifying patterns, making independent decisions, and learning from experience (machine learning). Artificial Intelligence (AI) comprises diverse technologies, including machine learning, neural networks, and natural language processing. These technologies allow computers to do tasks without explicit programming, evaluate data, and adapt to new knowledge.

Artificial Intelligence (AI), emerging in the mid-20th century, represents a transformative leap in technology. AI's impact spans sectors, reshaping how we live and work. With machine learning and robotics at its core, AI introduces unprecedented possibilities and challenges. From healthcare and finance to education and beyond, AI is transforming human's way of living, working habits and interaction process. While enhancing efficiency, innovation, and convenience, the widespread integration of AI raises important questions about its societal impacts. Issues such as job displacement, ethical considerations, and the need for regulatory frameworks come to the forefront.

Thus, exploration delves into the multifaceted effects of AI on different sectors, unraveling both its promises and challenges in shaping the future landscape of our interconnected society.

II. BACKGROUND / HISTORY

Artificial Intelligence (AI) started in 1956 at the Dartmouth Conference, initially focusing on symbolic AI. In the 1960s and 1970s, challenges caused a slowdown ("AI winter"), but expert systems gained popularity. The 1980s saw AI come back with machine learning, like neural networks. In the 1990s, AI found uses in speech recognition and computer vision. The 2000s had breakthroughs with support vector machines, and AI became part of daily life. The 2010s were dominated by deep learning in various fields. As of January 2022, AI keeps advancing with ongoing research in areas like reinforcement learning, explainable AI, and ethics, showing a continuous evolution from idea to reality.

III. PAST RESEARCH WORK

Yang Weiguo, Qiu Zitong and Wu Qingjun in their research paper "A Review of Research on the Employment Effect of Artificial Intelligence Applications" explore AI's impact on employment. They find AI accelerates job polarization and wage inequality while fostering labor mobility. Long-term effects include coexisting job substitution and creation, with creation gaining prominence. Wage inequality may be mitigated by sustained social policies, and job polarization is seen as temporary. Scholars suggest effective management of AI's impact on employment through promoting human-computer cooperation, enhancing labour skills via education and training, ensuring a balanced influence on the job market.

Kemal Gokhan Nalbant in their research paper "The Importance of Artificial Intelligence in Education: A short review" explores AI's transformative impact on education. The paper highlights AI's contributions to various aspects of learning, addressing conveniences, advantages, and drawbacks. Special attention is given to applications benefitting students with disabilities, including Seeing AI, Virtual Assistants, and more. The study underscores AI's pivotal role in facilitating remote and online learning, particularly during the COVID-19 pandemic, ensuring uninterrupted education. In summary, the research emphasizes how AI enhances education by fostering accessibility, personalization, and adaptability, even in challenging circumstances.

Kapil Kumar Gupta in their research paper "The Impact of Artificial Intelligence on the Job Market and Workforce" investigates the influence of AI and automation on human employment. The findings suggest that while these

technologies replace certain jobs, they struggle to replicate essential human qualities like intuition and empathy, which are still in development. Despite posing a potential risk to employment, the research emphasizes the importance of evolving human skills, indicating that adaptable individuals can avoid being entirely replaced by machines. The envisioned future involves a collaborative integration of human and machine labor, with AI and automation serving as tools to complement human work rather than outright substitutes, highlighting the significance of human-machine collaboration in the evolving world of work.

Dheeraj Singh and Dr. Geetali Tilak in their research paper "Employment Transformation through Artificial Intelligence in India" explore the impact of artificial intelligence on employment in. The study delves into the ongoing technological shift, emphasizing the evolution of traditional systems into smart, modern ones, bringing people into the digital world. While promising a more convenient lifestyle, the transformation raises crucial questions about employment, particularly in the context of India's impending industrial revolution. The paper examines how the adoption of innovative methods, driven by AI, may lead to the displacement of low and middle-skilled jobs, emphasizing the potential for increased productivity and revenue. It also highlights that high-skilled jobs are likely to remain intact, addressing the opportunities and challenges associated with this significant transformation in various industry sectors.

Lijia Chen, Pingping Chen and Zhijian Lin in their research paper "Artificial Intelligence in Education: A Review" assesses AI's impact on education, focusing on administration, instruction, and learning. AI has evolved from computers to web-based systems and humanoid robots. Instructors use AI for efficient administrative tasks and better teaching quality. AI's adaptability personalizes content, improving student engagement and learning quality. In summary, AI has significantly improved education by enhancing administrative and instructional functions, offering tailored learning experiences, and improving overall education quality.

G Abuselidze and L Mamaladze in their research paper "The impact of artificial intelligence on employment before and during pandemic: A comparative analysis" investigates how AI is influencing the business culture, taking Georgia as a centre of attention . It analyses AI development trends, potential job displacement, and the role of AI during the pandemic. The study evaluates the state of (AI) now and its potential for the business sector in the future using both qualitative and quantitative research techniques, such as text analysis, statistical data, and insights from prestigious universities.

Prof. Neha Saini in their research paper "Research Paper on Artificial Intelligence & Its Applications" investigates artificial intelligence (AI) as a multidisciplinary field that blends science and engineering to create intelligent machines through sophisticated computer programs. While closely linked to understanding human intelligence, AI extends beyond biological observations. Despite lacking a universally accepted definition, AI is commonly defined as the study of computational systems enabling perception, reasoning, and action. In present scenario, world is completely data-directed, Artificial Intelligence plays a crucial role in computer-based learning and complex decision-making across various domains.

The paper introduces key aspects of AI, covering definitions, historical evolution, wide-ranging applications, and its notable growth and achievements.

Gizem Sezgin and Yavuz Selim Balcıoğlu in their research paper "Artificial Intelligence and Its Impact on Society" explore the wide-ranging applications of Artificial Intelligence. The study highlights AI's contributions in healthcare, facilitating patient care, disease diagnosis, documentation, and even robotic surgery. In finance, AI enhances customer experiences through market analysis, mobile banking, and digital payment systems, while in education, it enables advanced teaching methods and personalized learning systems. The positive impacts of AI include increased productivity, revenue growth, and job creation, but challenges such as potential job layoffs, privacy concerns, and societal inequalities must be addressed. The paper emphasizes the importance of developing AI within ethical frameworks to ensure its positive contribution to society.

Dr. Mahesh Bansiya and Dr. Hansraj Patidar in their research paper "The Impact of Artificial Intelligence on Labor Markets" explore the adverse consequences of AI on workforce. Analysing both automation and augmentation effects, the study examines shifts in job structures, implications for job creation and destruction, and influences on skill mismatches, income inequality, and distribution. Addressing policy and societal responses, the research emphasizes the need for ethical frameworks and governance approaches for AI integration. The study underscores the importance of proactive policies to facilitate a smooth transition and promote inclusive growth in the evolving landscape of AI-driven labour markets, contributing valuable insights for policymakers and stakeholders.

Falih M. Alsaaty, Augustin Ntembe, Kavita Kapur and Hussain Ahmad in their research paper "The Rise of Artificial Intelligence and the Job Destruction View" investigate the employment impact of advancing artificial intelligence in the United States. Using the Autoregressive and Distributed Lag Co-integration (ARDL) method with patents as a measure of AI development, the study analyses data from 1970 to 2019. The findings challenge concerns about mass unemployment due to AI, revealing significant connections between AI innovation and increased labour demand across sectors. The paper argues against a pessimistic outlook on AI-induced unemployment, emphasizing the importance of long-term societal planning to meet the growing demand for a skilled labour force driven by AI.

Bohan Zhao in their research paper "Analysis on the Negative Impact of AI Development on Employment and Its Countermeasures" researches on the negative impact of AI on employment acknowledges the dual effects of technological progress, benefiting society while contributing to rising unemployment and income inequality. It critiques traditional policy measures and proposes practical solutions. Firstly, it suggests industrial relocation as a short-term remedy to counter AI's immediate effects on specific industries. Secondly, it recommends a fundamental overhaul of the academic organisation as a enduring strategy to prepare the workforce for an AI-driven future. These approaches aim to offer sustainable solutions, enabling societies to adapt effectively to the challenges posed by AI.

Qiran Yue in their research paper "Study on the Impact of Artificial Intelligence on Employment and Income Inequality, Based on Technological Determinism Theory" explores the transformative effects of China's rapidly growing AI industry within the fourth industrial revolution. It focuses on AI's tremendous effect on the people, majorly in terms of employment and income inequality. The study delves into dynamics like employment substitution and creation, issues of "emotional exploitation," digital disparities, and the emerging divide between the code-savvy elite and the "cyber working class." The paper provides a deep analysis of the evolving human-machine relationship, intricacies of employment and income inequality in the digital age, and offers a forward-looking perspective based on existing research, shedding light on the complex socio-economic implications of AI and its impact on social stratification structures.

D Majumdar and HK Chattopadhyay in their research paper "Artificial intelligence and its impacts on the society" emphasises on the idea of AI dating back to the 1950s which was initially seen as a problem-solving tool with the potential to surpass human capabilities. However, the widespread use of AI has raised legal and ethical challenges, particularly regarding privacy and societal norms. The paper discusses the evolving impact of AI on society, emphasizing unresolved questions and the need for proactive consideration of its implications. It addresses both the positive effects of AI and the challenges it presents, offering recommendations for further exploration.

Mayank Tejan, Tanmay Das and Prabhjot Singh in their research paper "Impact of Artificial Intelligence on The Human World" delves into the profound influence of AI, sparking intense research and discussion. The comprehensive analysis covers AI's impact on economic growth, healthcare, education, and social interactions. While presenting significant opportunities, the paper also addresses ethical, privacy, and fairness concerns inherent in AI development. It underscores the importance of responsible AI deployment, with a focus on human values. The authors advocate for collaborative efforts among researchers, policymakers, and industry stakeholders to harness AI's potential while effectively managing associated risks.

Dr Varsha Agarwal in their research paper "Impact of Artificial Intelligence on Humans: A Survey" researches explores the innovative advancements of AI in the contemporary world. From small handheld devices for facial recognition to complex skills like car driving, AI has evolved to emulate human intelligence. The paper covers concepts, trends, applications, and enhancements in creating intelligent computers. Emphasizing the behavioral and physical impact of AI on humans, the survey highlights the ambitious goal of instilling human-like intelligence in machines and the broad scope of AI's influence in various aspects of our lives.

Pinky Gupta's research paper, "Impact of AI In Our Life" explores the core concepts, trends, applications, and advancements in creating intelligent computers that emulate human thought and behavior. The paper delves into the behavioral and physical impacts of AI on society, highlighting the significant changes brought about by this technology. From simple tasks like facial recognition on handheld devices to complex skills like autonomous driving, AI is undergoing remarkable innovations. The evolution of AI originated as a response to challenges in manual and muscle-powered tasks, with the primary goal of imbuing machines with human-like intelligence and creating expert systems.

Falih M. Alsaaty
Bowie State University

Augustin Ntembe
Bowie State University

Kavita Kapur
Bowie State University

Hussain Ahmad
University of Virginia
Falih M. Alsaaty
Bowie State University

Augustin Ntembe
Bowie State University

Kavita Kapur
Bowie State University

Hussain Ahmad
University of Virginia
Falih M. Alsaaty
Bowie State University

Augustin Ntembe
Bowie State University

Kavita Kapur
Bowie State University

Hussain Ahmad
University of Virgi

Manuel Au-Yong-Oliveira, Carlos Lopes, Francisco Soares, Gonçalo Pinheiro, and Pedro Guimarães, in their research paper, "What can we expect from the future? The impact of Artificial Intelligence on Society," conducted ten interviews and surveyed 100 participants to explore concerns about AI's impact. The survey's findings indicate a widespread sense of unease, especially in relation to potential consequences for employment and a perceived loss of control. Surprisingly, over 50% believe humans will use computer power to enhance skills and stay ahead of AI. Interviews show that students in practical courses, such as engineering, express more fear of AI than social science students, possibly due to a deeper understanding of AI's implications for their careers or the belief in the unique human sensitivity in their fields that AI struggles to replicate compared to technical skills in other professions.

Sayed Fayaz Ahmad, Md Parves Alam, and Mohd. Khairul Rehmat's research paper, "Impact of artificial intelligence on human loss in decision making, laziness, and safety in education," investigates how AI affects Chinese and Pakistani

university students' decision-making, laziness, and privacy concerns. The 285-student study shows that AI affects judgment, encourages indolence, and poses privacy and security concerns. Notably, significant percentages attribute challenges, such as 68.9% for laziness and privacy concerns and 27.7% for decision-making challenges, to AI in both countries. The findings underscore the importance of responsible AI implementation in education to address these concerns.

Aşkın İnci, Sökmen Alaca, and Askin Inci Sokmen's research paper, "The Effect Of Artificial Intelligence Technology On Politics And International Relations," examines how artificial intelligence (AI) is influencing political area and international affairs in the digital age. AI, characterized by "thinking and self-learning" features, is reshaping states and societies, often viewed as an existential threat due to its potential to mimic human thinking. While lacking a universal definition, AI is generally considered a combination of software and hardware systems enabling digital reasoning, movement, speech, and perception. This ongoing project in computer engineering continues to profoundly influence the future.

Tomasz Słapczyński's research paper, "Artificial Intelligence in science and everyday life, its application and development prospects," evaluates artificial intelligence's effects on business and society. The study explores the role of AI in the future economy, considering its widespread use and potential threats. Using methods such as literature analysis and synthesis of collected facts, the paper concludes that AI's significance is increasing, influencing various aspects of life and societal development.

IV. CONCLUSION

Through combing numerous journals and research papers, this paper focuses on how Artificial intelligence have impacted the various aspects of human life in both exciting and terrifying ways. Artificial intelligence, in education sectors, have formed a wide web based online platform which aids the teaching quality with humanoid robots as teachers. Whereas it has also resulted in emotional exploitation by replacing extensive human labour and widening wage gaps by introducing computers and robots in the fields of banking, education, telecommunication, healthcare and many more. However, it can never be able to swiping jobs completely as it still lacks in sympathetic and intuitive intelligence which human possess. Thus, this review deeply dives into the cumulative effects of AI in advancing learning quality and uplifting the society in technological terms along with its drawbacks of becoming a stumbling block in the field of employment. All in all, Artificial Intelligence is a double-edge sword as it brings peace but can induce wars too. So, accompanied by reaping the benefits of Artificial Intelligence, it has also become necessary to explore the approaching warnings of it for sustaining legitimate development.

V. FUTURE SCOPE

This review paper opens avenues for deeper exploration in several key areas. Firstly, it dives into the ethical and security considerations surrounding AI world, addressing issues such as transparency, and most importantly income inequality. Additionally, examining the evolving role of AI in shaping and enhancing educational methodologies and curricular will

How Will AI Change Our Lives?

Share of respondents expecting the following areas to be changed most by the use of AI in the next 3-5 years
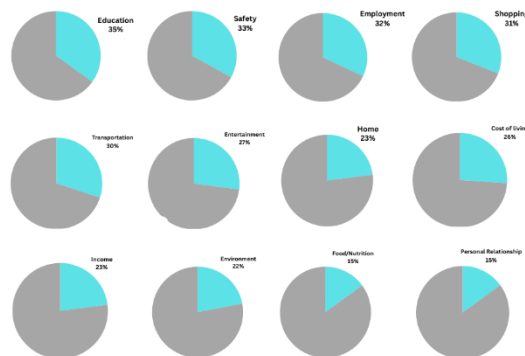
19,504 online adults (16-74 y/o) from 28 countries surveyed Nov.-Dec. 2021
Source: Statista, Ipsos

Fig 1.1:- Impacts of AI on various sectors.

provide insights for preparing future generations for a technologically advanced workforce and manpower. Furthermore, the paper's future scope involves closely monitoring policy developments and industrial practices to offer informed perspectives on the regulatory frameworks that may influence AI's societal impact. To enhance the practical relevance of our work, ongoing collaboration with experts from diverse fields, such as technology, sociology, and policy, will be essential for a comprehensive understanding of the evolving landscape of artificial intelligence and its implications for society.

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