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The Two Faces of Progress: A Look at the Socio-Economic Challenges and Opportunities Presented by Artificial Intelligence

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Abstract: ***An open letter was published on March 29, 2023, by the Future of Life Institute, a non-profit research organization, signed by hundreds of the industry's brightest figures, including Elon Musk, who labeled recent breakthroughs in AI as "profound risks to society and humanity," asking the world's top artificial intelligence laboratories to place a six-month halt on building new, super-powerful systems.***

A 298-page "International AI Safety Report" was published during the Paris AI Action Summit 2025, which brings together expert perspectives on AI capabilities and risks. Also announced was the creation of a new foundation dedicated to creating AI "public goods" called Current AI, which was established on 11th February 2025 with an initial endowment of $400 million from the French government. The highlight of the Summit, however, was the AI Action Summit Declaration, the statement that was signed by dozens of countries including France, India, and China, pledging an "open", "inclusive" and "ethical" approach to the technology's development. However, it wasn't signed by the US and UK, due to concerns about national security and "global governance." and because too much regulation of artificial intelligence (AI) could "kill a transformative industry just as it's taking off".

Once regarded as science fiction, artificial intelligence is now advancing and transforming the world's economies and societies at a rapid and fundamental rate. From self-driving cars to remarkably sophisticated medical diagnoses, applications are emerging at breathtaking speed, providing unparalleled benefits. However, these advancements bring about challenging socio-economic issues that necessitate careful interventions and proactive policies. The rapid progress in artificial intelligence (AI) has redefined the trajectory of technology's history, propelling it into new dimensions. Significant advancements have emerged from the transition from simple rule-based systems to sophisticated machine-learning systems. This debate focuses on artificial general intelligence (AGI), a theoretical form of reasoning that exceeds human capabilities across various domains. The implications of AGI for human existence require sober and thoughtful consideration as we navigate this landscape of possibilities.

This essay explores AI's various impacts and required policy changes, which can elevate or upset human society. It discusses the economic and social implications and policy responses to manage the challenges and benefits of this potent technology.

I. THE ECONOMIC IMPACT OF AI

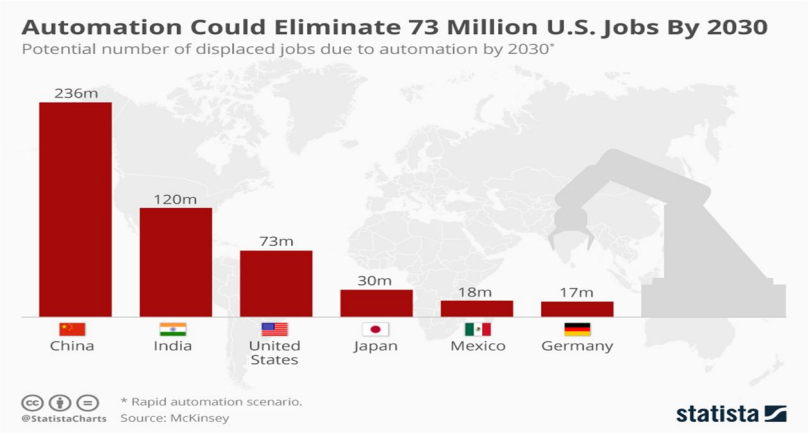
A. Automation and Job Displacement

The most feared today concerning AI is that it could automate long-outsourced human labor. Sophisticated AI systems will increasingly automate the most challenging jobs humans have already done, and therefore the need for human work in such fields will dwindle, causing losses of employment and stagnation of earnings for numerous workers. The more sophisticated AI systems are, the more they can replace human employees across a wide range of industries, from production to logistics and even customer service or creative work. This could result in massive job displacement for mundane and repetitive work.

According to a report by McKinsey Global Institute, automation could destroy as many as 73 million U.S. jobs by 2030. [1]

[1] McCarthy, Niall. "Infographic: Automation Could Eliminate 73 Million U.S. Jobs by 2030." *Statista Daily Data*, 1 Dec. 2017, www.statista.com/chart/12082/automation-could-eliminate-73-million-us-jobs-by-2030.

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Although AI will supplant people in mundane jobs, history shows that technology creates many advantages in emerging sectors too. An example is when AI entered the healthcare sector: more efficient diagnostic tools that minimize human error and increase accuracy in areas such as radiology and pathology have been developed.

"*The Artificial Intelligence in Healthcare Market Size was valued at USD 22.5 billion in 2023 and is expected to reach USD 370.14 billion by 2032, growing at a CAGR of 36.5% over the forecast period 2024-2032.*" [2]

Technologies like IBM Watson Health have revolutionized the entire process of disease diagnosis. This allows doctors to make more rapid and accurate decisions, improving patient outcomes. In logistics, similar AI-powered systems, such as self-driving trucks and drones, streamline the supply chain while cutting costs.

In the case of the Industrial Revolution, workers were replaced across agriculture sectors on one hand and created manufacturing industries and services on the other.

Hence, AI might also boost the industry and emerging job markets. For instance, creating AI-related systems would require more technically skilled people in data science, machine learning, and robotics. Additionally, as technology integrates further within those industries, opportunities can shift toward professions related to ethics in AI, policy-making surrounding AI, or the maintenance required by AI itself.

From the Google IPSOS "Our Life with AI" Survey,

"*As workers think about adapting to an economy with AI, education will be an important component: 44% of workers who feel their job will be impacted by AI anticipate needing to learn how to use AI, and 34% say they will need to reskill or take some type of coursework to adapt.*" [3]

To conclude, it's not that AI is "eating up jobs", it's just that the technical and educational qualifications required for most jobs have increased.

B. Economic Inequality

The concentration of AI development within a few powerful corporations also poses a serious risk of further exacerbating existing economic inequalities. The benefits of AI-driven innovation are also not evenly distributed. Large segments of this population will probably not benefit from AI at all; particularly the low-skilled and the least educated, who may find themselves increasingly unable to adapt to the dramatically changing nature of jobs, further adding to income inequality and social upheaval.

C. Economic Growth and Productivity

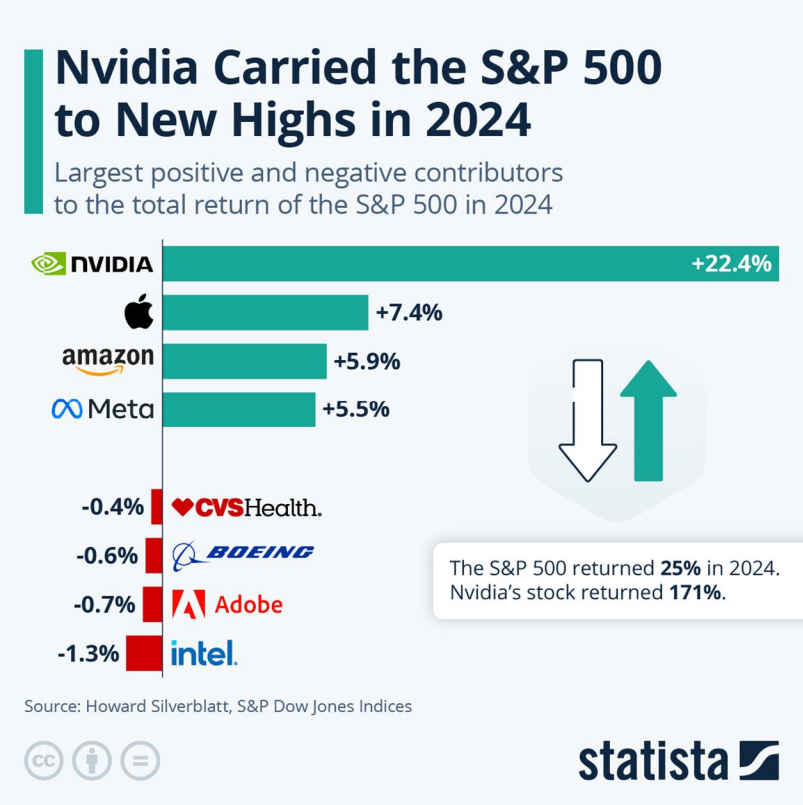
No one can deny the amount of economic growth brought about by AI. On 18th June 2024, NVIDIA became the world's most valuable company, when its market capitalization reached $3.34 Trillion, surpassing Microsoft's valuation at the time. Its growth was largely driven by the growing demand for its chips in the artificial intelligence market. [4]

[2] Ltd, S. I. P. (2024, August 30). Artificial intelligence in healthcare market to hit USD 370.14 billion by 2032, fuelled by AI integration in diagnostics and treatment | SNS Insider. GlobeNewswire News Room. https://www.globenewswire.com/news-release/2024/08/30/2938549/0/en/Artificial-Intelligence-in-Healthcare-Market-to-Hit-USD-370-14-Billion-by-2032-Fuelled-by-AI-Integration-in-Diagnostics-and-Treatment-SNS-Insider.html

[3] Global study shows optimism about AI's potential. (n.d.). Google Public Policy. https://publicpolicy.google/article/global-study-shows-optimism-about-ais-potential/

[4] Reuters. (2024, June 18). Nvidia becomes world's most valuable company. *Reuters*. https://www.reuters.com/technology/view-nvidia-becomes-worlds-most-valuable-company-2024-06-18/

Also, like last year's rally, the S&P500's strong showing in 2024 was largely fueled by the excitement surrounding artificial intelligence, as chipmaker NVIDIA ("which quite literally powers the transition to an AI-centric future") saw its share price surge 171% through the year. It contributed more than 22% to the S&P500's overall return, putting it miles ahead of Apple, Amazon, and Meta, who accounted for 7.4, 5.9 & 5.5 % of the index's full-year growth respectively. [5]



Source: Howard Silverblatt, S&P Dow Jones Indices

AI has been driving short-term growth in the economy and enhancing productivity. Applications of AI, such as predictive maintenance systems already used by companies like General Electric, determine settings to improve efficiency and reduce downtime in manufacturing.

"*Predictive maintenance is important because it saves companies time and money by heading off costly and disruptive equipment failure.*" [6]

They reduce costs and improve the reliability of industrial operations by predicting equipment failures before they occur.

Second, AI automation helps enhance a customer's experience by ensuring the utilization of chatbots and virtual assistants, as it has diminished wait times for most of these operations within an economy and industry.

On one hand, AI triggers short-term economic growth, but on the other hand, in the long run, it may cause economic instability and serve as a job market disruptor. High technological change velocity creates uncertainty, which negatively impacts investment. Moreover, if not well managed, AI may increase economic inequality and social unrest, as mentioned earlier.

II. SOCIAL IMPLICATIONS OF AI

A. Privacy and Surveillance

The widespread use of AI gives rise to a lot of critical issues about privacy and surveillance. AI takes massive amounts of personal data, increasing the potential misuse and exploitation of their systems. There is also a greater chance of major data breaches, hacking attacks, or unauthorized access to people's private information.

[5] Richter, F. (2025, January 2). Nvidia carried the S&P 500 to new highs in 2024. *Statista Daily Data*. https://www.statista.com/chart/32015/contributors-to-the-sp500-return/#:~:text=Like%20last%20year's%20rally%2C%20the,171%20percent%20through%20the%20year.

[6] *What is predictive maintenance? A complete overview | SAP*. (n.d.). SAP. https://www.sap.com/india/products/scm/apm/what-is-predictive-maintenance.html

Moreover, there is surveillance capitalism[7] that leads to profits from the harvesting and analysis of all users' data, threatening the freedom of people. The continuous monitoring of online behavior may result in the loss of individual privacy and the erosion of civil liberties. While AI does pose a challenge to privacy, there are positive applications of AI that protect privacy too. Facial recognition technology can be applied to improve security in public places and prevent crimes before they occur, as with Singapore's cities, which have made remarkable reductions in crime rates using AI-powered surveillance systems. A recent study found that smart technologies such as AI could help cities reduce crime by 30 to 40 percent and lower response times for emergency services by 20 to 35 percent.[8]

B. Ethical Considerations

A variety of ethical concerns arises in development and deployment. One of the most significant ethical issues is algorithmic bias. AI systems could perpetuate or amplify existing biases in society, such as discrimination against certain groups when making hiring or lending decisions based on flawed algorithms. For example, Amazon's AI recruiting tool was discontinued after it was found to favor male candidates, reflecting the biases present in the data. This occurred because Amazon's computer models were trained to vet applications by observing patterns in resumes submitted to the company over the past decade. Most of these resumes came from men, reflecting male dominance in the tech industry. As a result, the system taught itself to prefer male candidates. Amazon adjusted the programs to neutralize these specific terms, but there was no guarantee that the machines wouldn't find other discriminatory ways to sort candidates; consequently, the tool was disbanded [9]

C. Digital Divide

The access to and benefits of AI technology are unequal around the globe. As discussed in the Economic Inequality section, the opportunity divide is likely to be enlarged by AI. As AI development has been so swift, developing countries may find themselves unable to stay in step. "*The rapid advancements in artificial intelligence (AI) have widened the digital divide, creating what is now known as the AI divide. This divide represents the unequal access, benefits, and opportunities in AI technology across various regions, communities, and socioeconomic groups.*" [10]

Furthermore, even within developed countries, there is always a possibility of an increased digital divide between tech-savvy individuals and those with little technology knowledge.

III. POLICY RESPONSES AND FUTURE OUTLOOK

A. Government Regulation

Governments across the world must walk the thin line between promoting innovation and minimizing risks. Though it is imperative not to stifle the revolutionary potential of AI, clear and well-defined regulatory frameworks are essential. These should address concerns regarding data privacy, algorithmic bias, safety, and potential misuse while encouraging responsible AI development.

International cooperation is essential for addressing these global challenges. By working together, countries can achieve several critical objectives, including the creation of common standards and best practices for developing and deploying AI. This will level the playing field and prevent regulatory fragmentation. Coordinated regulatory efforts also enhance effectiveness and avoid conflicts or contradictory regulations. Finally, sharing information and expertise on AI safety, ethical considerations, and best practices can speed up progress and promote a global understanding of the opportunities and challenges presented by this transformative technology technology. According to a Deloitte analysis of OCED.AI Policy Observatory Data [11], mapping existing AI Policy instruments that tend to be enacted together shows that, in contrast to the clear clusters that emerge in other areas, AI policies are remarkably consistent. The cluster in the center represents policies that are enacted by nearly all the countries studied, indicating a common set of policies for most countries of the group.

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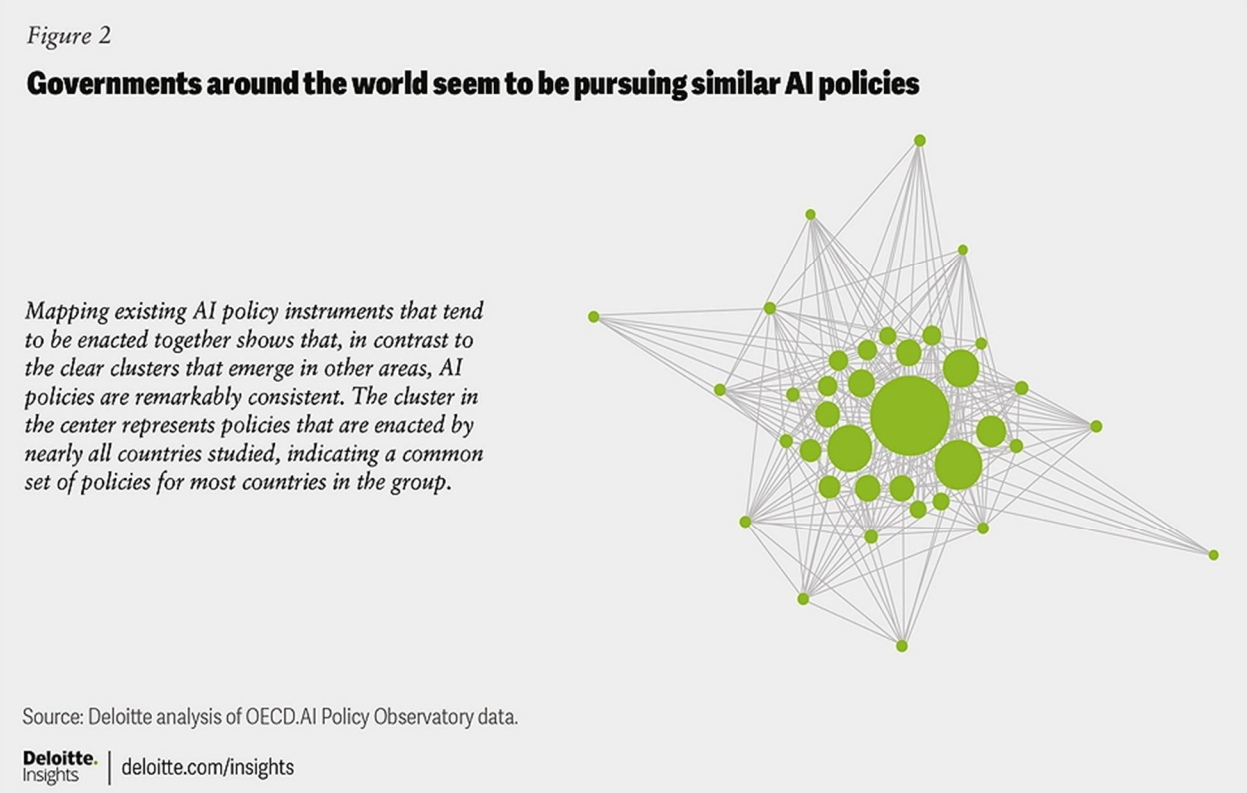
[7] *Book review: The Age of Surveillance Capitalism: The Fight for a Human Future At the New Frontier of Power by Shoshana Zuboff*. (2020, January 30). LSE Review of Books. https://blogs.lse.ac.uk/lsereviewofbooks/2019/11/04/book-review-the-age-of-surveillance-capitalism-the-fight-for-the-future-at-the-new-frontier-of-power-by-shoshana-zuboff/

[8] *Surveillance and predictive policing through AI*. (2024, March 29). Deloitte. https://www.deloitte.com/gh/en/Industries/government-public/perspectives/urban-future-with-a-purpose/surveillance-and-predictive-policing-through-ai.html

[9] Dastin, J. (2018, October 11). INSIGHT - Amazon scraps secret AI recruiting tool that showed bias against women. *Reuters*. https://www.reuters.com/article/world/insight-amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK0AG/

[10] UNESCO. (2024). AI literacy and the new digital Divide - a global call for action. In *www.unesco.org/*. https://www.unesco.org/en/articles/ai-literacy-and-new-digital-divide-global-call-action

[11] *The AI regulations that aren't being talked about*. (2024, September 25). Deloitte Insights. https://www2.deloitte.com/us/en/insights/industry/public-sector/ai-regulations-around-the-world.html



Source: Deloitte Insights

B. Education and Workforce Development

Governing systems and educational bodies have to, in preparation for this AI-based future, skill their workforce or re-skill. This refers to the provision of skills, among others that can sustain one against workplace changes; these include skills such as data science, machine learning, and AI ethics.

The future period will see a lot of people having to sustain their learning in order not to become outdated in the workplace; hence, the future will be characterized by lifelong learning.

Investment in education and workforce development is necessary to prepare people with the skills needed to succeed in an AI-driven economy. This involves developing lifelong learning opportunities and encouraging digital literacy in all aspects of society.

Only 10% of schools and universities currently have an official framework for the use of AI, according to a survey of 450 institutions conducted by UNESCO in May 2023.

By 2022, only 7 countries had developed AI frameworks or programs for their teachers, and only 15 included objectives on AI training in their national curricula. At the same time, more and more countries are placing restrictions on the use of new technologies in the classroom. According to new data from UNESCO [12], almost 40% of countries now have a law or policy banning the use of mobile phones in schools – up from 24% in July 2023. Hence, the Director-General of UNESCO, Audrey Azoulay, decided to dedicate International Education Day 2025 (Friday 24 January) to the opportunities and challenges of artificial intelligence. She called on UNESCO's Member States to invest in training both teachers and students on the responsible use of this technology within the field of education. [13]

C. Ethical Frameworks

Ensuring AI is used positively requires the evolution of guidelines on ethical development and the use of AI. An ethical framework around areas such as bias, transparency, and accountability is needed.

[12] Technology | Education Profiles. education-profiles.org/themes/~technology

[13] UNESCO. UNESCO dedicates the International Day of Education 2025 to Artificial Intelligence. 20 Jan. 2025, www.unesco.org/en/articles/unesco-dedicates-international-day-education-2025-artificial-intelligence?hub=66580

Audit and certifications for ethical AI would ensure that AI systems are developed and deployed ethically.

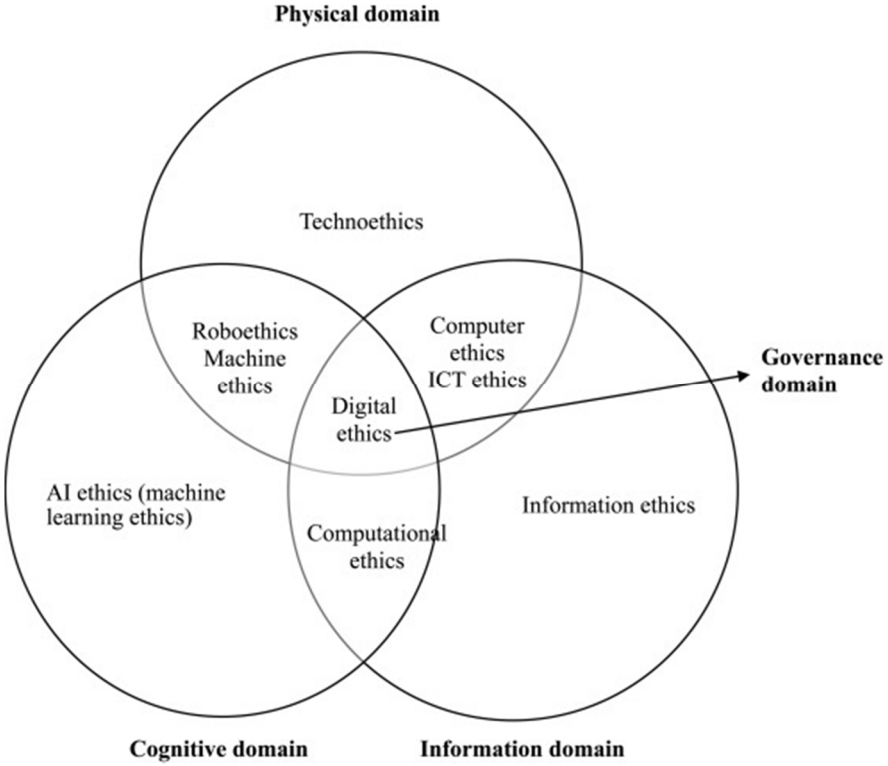
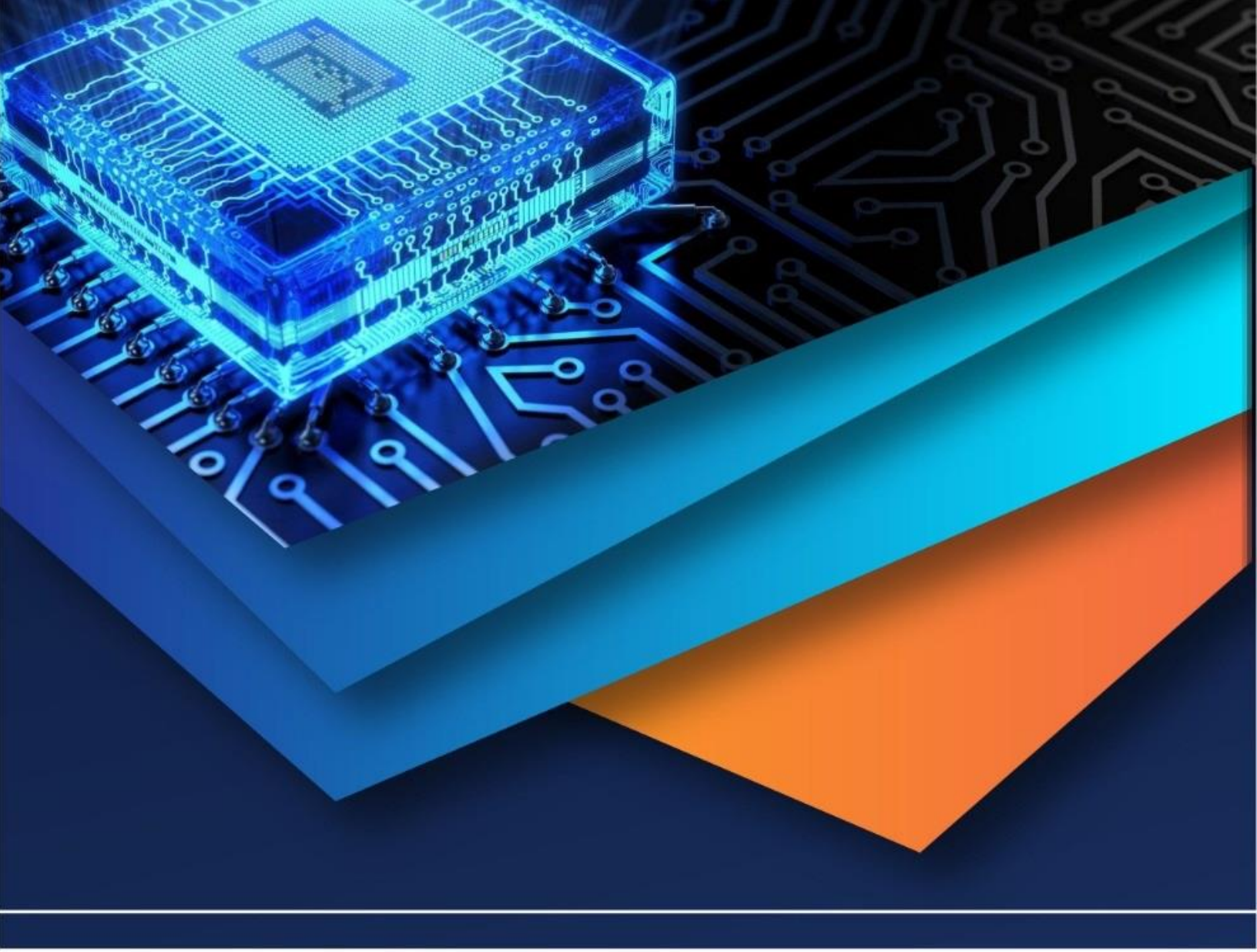


Image Source: [14]

IV. CONCLUSION

AI can redefine the future of humanity if the generation follows conscious and responsible policies and practices regarding AI, encouraging ethical application and investing in education. Then, we could make such technology a source of progress instead of an instrument of inequality and harm. Through this, with the right set of policies in education and training, and the practice of responsible development of AI for the benefit of all, it can be achieved for AI to work according to our best interests.

[14] Ashok, Mona, et al. "Ethical framework for Artificial Intelligence and Digital technologies." *International Journal of Information Management*, vol. 62, Feb. 2022, www.sciencedirect.com/science/article/abs/pii/S0268401221001262?via%3Dihub



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