



Influence of Artificial Intelligence on Robotics Industry

Ashok Kumar Reddy Nadikattu

Sr. Data Scientist & Department of Information Technology

California USA

Abstract

Although there exist restricted executions of Artificial Intelligence (AI) across a few sectors, automation profoundly influences the robotics industry. The trend shows no mark of impeding. Currently, the creative integration of robotics and AI constructs an assemblage of futuristic opportunities in technology. Economic effects of robotic developments and AI have produced self-driving motors, intelligent electronic agents that work for people, which ultimately makes robots proliferate. AI gets projected on having broad applications such as machine learning that mechanizes analytical approach construction through algorithms. Algorithms permit robots to function with humanitarian aid. However, artificial intelligence contains some advantages and disadvantages. The benefits conquer several risk hindrances of humans by advancing on Artificial Intelligence Robot, which conducts harmful activities that people cannot engage. Guidelines concerning AI in the robotics sector include mobility, sense and feedback, customer assistance alongside open-source robotics, and

process optimization. Looking into the future of AI and robotics, the manufacturing industry becomes an emerging trend. Manufacturing over the years gets considered as a sector with the most significant level of technology.

Nonetheless, wholly automated manufacturing plants seem distant, and AI robots get positioned to modify that condition. The range of AI's advancement in the future will discover the economic effect of AI on the worldwide economy. For this discussion, the paper aims at expounding on the economic impact of incorporating AI within the robotics sector, considering the modifications attached, pros and cons, financial results, and the current emerging trends.

Key Words

Artificial Intelligence, robotics, algorithm, natural language processing,

Introduction

The application of AI within robotics primarily focuses on intensifying some industrial robotics abilities. Although experts alongside scientists are yet to recognize the whole prospect of robotics and AI, current utilization cases portray

a bright future. Artificial intelligence refers to a discipline of computer science intending to construct intellect equipment that operates and responds like people (Wang et al., 2018). Devices running on AI become smarter with age since they embrace practical exercises daily. AI-powered automation currently plays a crucial role in finance, data assessment, healthcare, marketing, and much more. The rising AI accompanies essential questions concerning its effect on enterprises, clients, and the economy (Szczepański, 2019). Workers are increasingly attentive to knowing what AI encompasses for their occupation and earning. Corporations are keen on searching for ways to finance opportunities showcased through AI on robotics. There exists a global agreement that AI automation contains the potential to transfigure manufacturing and donate to addressing core worldwide challenges, an outlook shared by corporations.

Literature Review

Economic Impacts of Robots due to Artificial Intelligence.

AI manifests as a drive for economic development and productivity. It maximizes the efficiency with which operations occur that largely boost decision-making practice through assessing large data quantities. AI also gives rise to recent commodities and services, markets alongside industries, hence improving customer demand and generating new sales streams (Wladawsky-Berger, 2018). Nonetheless, AI contains a highly interruptive influence on the community and its economy. Caution lies that AI could lead to making super organizations – hubs of fortune and insight – that possess damaging effects on the broader economy (Furman & Seamans, 2019). The automation also lengthens the gap between

advanced and advancing states and improves the requirements for employees with specific competencies while making others disposable. The latter shift contains far-reaching effects on the labor market. Economic specialists further warn of AI's potential to enlarge inequality, reduce income and shrink the levy base. Although these concerns are still defensible, there lacks consensus as to whether and to what degree associated risks occur. The European Union (EU) shows potential in improving its stance within global rivalry and direct AI onto a route benefiting its economy and inhabitants (Ivanov & Webster, 2019). To accomplish such potential, the EU first needs to concur towards a standard plan that uses its strengths and sanctions pooling of Member Countries' finances suitably.

Research conducted by PricewaterhouseCoopers projects that worldwide GDP may expand up to fourteen percent, proportional to 15.7 trillion U.S. dollars by 2030 due to speeding development and taking up AI (Wladawsky-Berger, 2018). The report projects an upcoming wave of digital uprising unleashed through the assistance of data produced from the Internet of Things, larger than data created by the recent Internet of People (Wladawsky-Berger, 2018). PricewaterhouseCoopers observes two main means by which AI influences the world economy. The initial channel constitutes AI-inducing productivity yields within the closer term, founded on the technology of routine activities likely to affect the robotics industry among other capital-intensive industries (Wladawsky-Berger, 2018). The channel further encompasses the lengthened utilization of automation, for instance, autonomous motors and robots. Productivity further improves because

enterprises complement and help their existing personnel with AI automation (Chen et al., 2016). It needs financing in software, machines, and systems based on aided, expanded, and autonomous intelligence, enabling workers to perform duties better and more effectively and create time to concentrate on high value-adding and vital tasks.

According to Wladawsky-Berger (2018), artificial intelligence contains the potential to attach sixteen percent or close to thirteen trillion dollars by 2030 towards present global economic gain—an average yearly donation to productivity development of nearly 1.2 percent between currently and 2030 (Wladawsky-Berger, 2018). The McKinsey report gets founded on simulation approaches of the influence of AI at the industry, state, organizational, and worker degrees. In addition to the economic advantages, AI causes fundamental disruptions for economies, employees, and firms. There exist substantial expenses linked to administering labor-market shifts, particularly for employees remaining after AI automation, that could minimize the gross effect of AI. The economic influence emerges slowly and is identifiable only over a particular period.

Advantages and Disadvantages of Artificial Intelligence.

Advantages

One advantage of artificial intelligence is its capability of taking risks instead of people. The AI robot development conducts activities that are dangerous for people to do. Some occupations such as assembling and wrapping radioactive effluents are harmful to human employees, and as a result, robots are increasingly utilized to boost workers' safety (Owen-Hill, 2019). Another

advantage of artificial intelligence is its availability every time. According to Kumar (2019), unlike people who operate for four to six hours a day eliminating breaks, robots that use AI can work for twenty-four hours per day without breaks.

Today's businesses encounter many data, and while hand-operated data assessment is time-consuming, AI robots process and evaluate large data quantities at a prime time. AI systems rapidly identify pertinent information, recognize trends, make choices, and offer directives founded on past data. Algorithms can rapidly assess the impact of marketing substances, remember customer choices, and give actionable knowledge based on client behaviors (Callahan, 2020). The bandwidth for in-depth evaluation permits business leaders to create better and further informed choices to advantage their functions. Under the classification model, machine learning algorithms try to draw inferences on the foundation of historical coaching data (Callahan, 2019). Following the processing of coaching data, the approach then classifies the new data. Classification also approaches aid marketers with lead scoring and scrutiny of client's alignment with a given service or commodity.

AI robotics also minimizes the rate of human mistakes. Repetitive tasks are prone to human errors. When jobs are mundane, people tend to lose focus. However, AI robots do not require any human concentration since they are prearranged to perform their roles. The AI systems eradicate the risks of human errors for allocated jobs, which produces quality and accurate outcomes. Another advantage is better workflows. While AI is often leveraged to mechanize entire activities, it further possesses many hands-on applications for boosting human jobs. Deep

studying technologies such as automated speech recognition and natural language processing shift how individuals operate in education, entertainment, law enforcement, and media occupations.

Disadvantages

AI robotics get accompanied by high expenses. It needs enormous charges since it deals with complex equipment. Aside from installation charges, its restoration and maintenance charges are high (Agrawal et al., 2017). Software applications require several amendments to cater to altering environmental needs (Agrawal et al., 2017). Further, if there exists any breakdown, procurement charges increase, and recovery needs a lot of time. Another disadvantage is a lacking human duplication. Devices cannot replicate humans despite their high degree of intellect. Machines show rationality but lack emotional and ethical values. If robots experience an unfamiliar situation, they perform inaccurately or break down.

Innovation is not the primary component of AI. Machines lack creativity and only perform functions based on the executed commands. While robots aid in structuring and making, they lack the capability of matching the human brain's influence. People are sensitive and intelligent, with the ability to generate concepts and think beyond the expected rate. Most human acts are directed by emotions and intuitive capacities, which contrast to machines. Even with device upgrades, robots do not match up to the innovation level portrayed by humans. Another disadvantage is unemployment which is one of the riskiest and possesses acute effects. Human-intensive needs reduce in some states with widespread capital automation (Reveley & Eduardo, 2017). There is a probability

of people getting displaced by machines if they fail to boost their expertise. The primary issue of a stagnant GDP is the unemployment rate. Individuals lack the necessary competencies, which ultimately causes a huge gap in supply and demand.

Principles of Artificial Intelligence in Robotics Industry

The first tenet is sense and feedback. Conventional robots get furnished with the capacity to pick items within a fixed orientation as long as objects get recognition, and their graphic area is specified. According to Polly (2020), new robots, when contoured with sensors, become programmable through Artificial Intelligence to identify a particular object despite its region in the working environment. Through a section of AI termed as machine learning, robots educate themselves quickly to tackle things for the first time. The algorithm executed in machine learning advances as robots pick more items. While the technology's development is fast-moving, robots are encountering increased challenges when picking flexible items.

The second principle, process optimization, ensures security and accuracy in robots. Producers in the robotics sector utilize AI to identify a suitable timeframe for offering comprehensive robotic maintenance (Dimiduk et al., 2018). It aids clients in evading unnecessary malfunction linked to charges of core repairs. Robot performance is enhanced through managing a thorough assessment of data acquired from its sensors. It constitutes facets such as power use and motions. The application running the robot gets altered in actual time by utilizing products from the Artificial Intelligence algorithm. Although it is a voluntary requirement to utilize AI for process

mechanization and foreboding maintenance, AI is inclined to making the task quick and correct. Within mega technology projects, robots get associated with different machines. AI at this point gets incorporated to evaluate data acquired from all linked devices hence assisting in process optimization.

The third principle is mobility. Robots revealed mobility capacities for over sixty years. Nonetheless, AI creates a possibility for robots to accomplish accurate mobility within complex and uncertain surroundings. Conventionally, robots get programmed for integrations of linear operations while acquiring directives from signals discharged by devices implanted in their surroundings (Huiling & Goh, 2017). Conversely, conventional robots cannot maneuver uncertain events on their travel route. An AI sanctioned robot maneuvers through its travel route through real-time apprise creation of a preprogrammed plan or constructing a navigational chart from the roots in actual time (Polly, 2020). It strategizes a path to the deliberated destination, sensing hindrances in its route and re-strategizing the route as it moves. Mobile robots issued with AI automation are in trading use for activities such as stock management, cleaning large devices and offices, exploring harmful surroundings to humans, and carrying commodities in manufacturing plants and hospitals.

The tenet, customer service, and opensource robotics are applicable in restaurants and retail spaces in America and worldwide. Robots get utilized to interact with clients humanely due to AI's natural language processing ability (Deng & Liu, 2018). An extended association between customer aiding robots and people enhance their abilities. Within the robotics

sector, different robots exist given an open-source robotics structuring presenting AI abilities. It implies that people can coach a robot purchased to conduct duties aligned to their intended purpose.

The future of Artificial Intelligence in Transforming Robotics Industry and Manufacturing.

In the future, AI robots will manage to perform complex and dangerous functions. While this automation seems intensely counterfeit, AI machines get structured to modify humanity. AI transforms the robotics sector by tackling hazardous jobs in United States. Future robots contain the ability to assume control over risky tasks such as disabling explosives or dealing with radioactive materials (Hooijdonk, 2019). AI robots withstand operating in hostile environments, saving countless human lives (Gupta, 2020). The future of AI has American citizens and robots sharing a workspace. Robots and people will interconnect within a shared environment. For a fact, some corporations have started stationing trends to revolutionize through using robots as shop agents. The future holds more intelligent robots that are more efficient in their jobs. The constant interaction will create a secure surrounding for both people and robots, and hence the trend will encounter a universal adoption.

According to Huang (2019), the future of AI robots' performance manifests in three forms: scalability, vision structure, and intellect placement. Beneath scalability, as machines assemble additional data through their operation, the correctness of the machine learning approach gets enhanced. The future in manufacturing has in-depth learning approaches undergoing cloud storage, which permits robots to study from one another and share insight (Huang, 2019). Vision

structure focuses on machine vision, making massive advancement through creativity from in-depth learning, semantic subdivision, and scene comprehension. Under intelligent placement, exploiting AI has robotic arms discerning depths appropriately. Material modeling gets utilized to project and remake 3D items.

Conclusion

While there existed limited AI applications across some sectors, technology severely impacted the robotics sector. The paper disclosed economic effects as a result of utilizing artificial intelligence in companies and the community. Presently, an innovative combination of robotics alongside AI creates gathered future opportunities within automation. The paper also expounded on AI principles in the robotics industry, accompanied by the advantages and disadvantages of using AI. There existed emerging trends in the future of AI, which carry positive influences. AI seeks to improve the businesses and interrelation between humans and robots in a work setting.

References

1. Agrawal, A., Gans, J. S., & Goldfarb, A. (2017). What to expect from artificial intelligence? Massachusetts Institute of Technology. <http://mitsmr.com/2jZdf1Y>
2. Callahan, G. (2020). What Are the Advantages of Artificial Intelligence? Rev. <https://www.rev.com/blog/what-are-the-advantages-of-artificial-intelligence>
3. Chen, N., Christensen, L., Gallagher, K., Mate, R., & Rafert, G. (2016). Global Economic Impacts Associated with Artificial Intelligence. Analysis Group Inc. https://www.analysisgroup.com/globalassets/insights/publishing/ag_full_report_economic_impact_of_ai.pdf
4. Deng, L., & Liu, Y. (Eds.). (2018). Deep Learning in Language Learning Processing. Springer.
5. Dimiduk, D. M., Holm, E. A., & Niezgod, S. R. (2018). Perspectives on the Impact of Machine Learning, Deep Learning, and Artificial Intelligence on Materials, Processes, and Structures Engineering. Integrating Materials and Manufacturing Innovation, 7, 157–172. <https://doi.org/10.1007/s40192-018-0117-8>
6. Furman, J., & Seamans, R. (2019). AI and the economy. Innovation Policy and the Economy, 19. <https://www.journals.uchicago.edu/doi/abs/10.1086/699936>
7. Gupta, S. (2020). Artificial Intelligence Future – How it will affect our lives in the next decade? Springboard. <https://in.springboard.com/blog/artificial-intelligence-future/>
8. Hooijdonk, R. (2019). The future of robots and artificial intelligence. Future Timeline. <https://www.futuretimeline.net/blog/2019/02/16.htm>
9. Huang, B. (2019). It's Here! How AI Robot Will Revolutionize Manufacturing. Towards Data Science. <https://towardsdatascience.com/its-here-how-ai-robot-will-revolutionize-manufacturing-44ce784438d4>
10. Huiling, E., & Goh, B. (2017). AI, Robotics and Mobility as a Service: The Case of Singapore. The Journal of Field Actions. (1), 26-29. <https://journals.openedition.org/factsreports/4411>

11. Ivanov, S. and Webster, C. (2019). Economic Fundamentals of the Use of Robots, Artificial Intelligence, and Service Automation in Travel, Tourism, and Hospitality. Ivanov, S. and Webster, C. (Ed.) Robots, Artificial Intelligence, and Service Automation in Travel, Tourism and Hospitality. Emerald Publishing Limited. <https://doi.org/10.1108/978-1-78756-687-320191002>
12. Kumar, S. (2019). Advantages and Disadvantages of Artificial Intelligence. Towards Data Science. <https://towardsdatascience.com/advantages-and-disadvantages-of-artificial-intelligence-182a5ef6588c>
13. Owen-Hill, A. (2019). 5 Super-Dangerous Jobs That Robots Can Do Safely. Robotiq. <https://blog.robotiq.com/5-super-dangerous-jobs-that-robots-can-do-safely>
14. Polly. (2020). How AI Affects the Robotics Industry and What the Future Holds. Robotics & Automation. <https://roboticsandautomationnews.com/2020/03/10/how-ai-affects-the-robotic-industry-and-what-the-future-holds/31197/#:~:text=AI%20has%20been%20used%20to,associated%20costs%20of%20major%20repairs.>
15. Reveley, J., & Eduardo, P. (2017). Robot induced technological unemployment: Towards a youth-focused coping strategy. Psychosociological Issues in Human Resource Management, 5(2), 169-186. <https://www.ceeol.com/search/article-detail?id=588745>
16. Szczepański, M. (2019). Economic impacts of artificial intelligence (AI). European Parliamentary Research Service. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/637967/EPRS_BRI\(2019\)637967_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/637967/EPRS_BRI(2019)637967_EN.pdf)
17. Wang, P., Liu, K., & Dougherty, Q. (2018). Conceptions of Artificial Intelligence and Singularity. MDPI, 9(4), 79. <https://doi.org/10.3390/info9040079>
18. Wladawsky-Berger, I. (2018). The Impact of Artificial Intelligence on the World Economy. The Wall Street Journal. <https://www.wsj.com/articles/the-impact-of-artificial-intelligence-on-the-world-economy-154239899>