Original Research Article

EXPLORING THE APPLICATIONS AND CHALLENGES OF ARTIFICIAL INTELLIGENCE IN RESEARCH

*** Anjana Rai**

* *Research Scholar, Guest Faculty Institute of Management (Pt. RSU) Raipur*

Abstract:

Artificial Intelligence is one of most demanding and innovative field of science which is basically based on digital world and governs by the computer technology. It is the latest application of computer science. In today's world use of AI is increasing in each and every field like medicine, organization, railways, Hospitals, Vehicles etc. Research is one of the important fields where the use of AI plays very important role hence use of AI is increasing day by day in this field too. There are various applications of AI in research like Data Analysis, Hypothesis generation, Automation of task, Literature Review, Experiments with use of Robotics, Modeling for forecasting and many more. On the other hand Quality of data, Transparency, Ethical and Moral Issues, Privacy and Security are some of challenges of AI in research.

Key Word: *Artificial Intelligence, Computer Technology, Robotics*

Artificial Intelligence is one of most demanding and innovative field of science which basically based on digital world and governs by the computer technology. It is the latest application of computer science. In today's world use of AI is increasing in each and every field like medicine, organization, railways, Hospitals, Vehicles etc. Research is one of the important fields where the use of AI play very important role that is why its uses is increasing day by day in this field also.

It helps to improve the quality and accuracy of researches. It helps the researcher to do their research in advance way. This Technology provide assistance each and every phase of research from the beginning to end of research. It helps in a various way like data collection, a data analysis, proposing in hypothesis, analyzing the problem etc.

Literature Review:

Gupta R.(February 2023) said that creating a machine that genuinely feel emotions like human is very crucial task. The main aim of AI to make a machine which has emotion and intelligence like human and to some extent it has achieved the same. But at present AI technology is not able to replicate all those features of human. Reddy K.(March 2024) said that AI significantly affect the Indian businesses . It opens door to new ideas and help businesses to grow. There are many benefits of AI, on the other hand there are certain problems too like the fear of losing the jobs as some jobs are being replaced by AI, it can perform faster, cheaper and sometimes it can be better than humans. Saini N. (2023) stated that the main objective of AI to work on problems which are difficult to handle directly by human. World picture will definitely be changed completely with development of this field.

Objective of the Research:-

- To study the opportunities of AI in Research.
- To study the Challenges of AI in Research
- To identify the area where AI can be more effectively utilized.

Application of AI in research:

Data Analysis: we know the data analysis is very important part of research. AI plays a very significant role in data analysis. Analyzing the data and determining the trends become very versatile with the

help of AI. Determining the actual fact from the data is very laborious and intellectual work and likely to have human mistakes. With the help of AI actual facts can be drawn from the data with acute accuracy with less time & effort.

The solutions drawn with help of AI are more accurate as compared manual analysis.

- **Literature review:** Scanning large number of research literature can be done very easily through AI which can identify relevant research papers/generals, can dig out required details and conclude all details drastically. This gives pace to literature review process.

- **Automation of task:** Monotonous tasks such as data collection, cleaning and distribution are possible with AI with less effort and accuracy. This enables researcher to focus on more complex tasks.

- **Hypothesis generation**: To develop correct hypothesis is very important, tedious as well as laborious work which is done by AI with more precision and perfection. Now a day's AI are being used to prepare initial ideas, such as AI tools can help researcher to prepare their research questions more towards the topic, suggestion towards related areas for exploration and can even propose new way to solve problems. AI tools can use existing data to prepare hypothesis with help of different models.

- **Experiments with use of Robotics:** AI driven robotics technology is very helpful in experimental analysis which reduce the chance of human error and increase the accuracy of analysis. We can conclude this stating that the role of AI plays very vital role in experiments performed in laboratories with accuracy.

- **Modeling for Forecasting:** With the help of algorithms forecasting in various sectors become very important nowadays. AI can help to predict outcome based on available data in different fields such as climate modeling, research in social science,

finance, retail, manufacturing, transportation and drug discovery etc.

Challenges of AI in Research:-

- Quality of data: AI driven robotic technology depend of quality of data which is previously available. If the data is bias automatically the result drawn from the same will also be affected. It will also affect the accuracy of research analysis.

- Transparency; Sometimes AI works as black-box technique. This means it provides outcome of the problem but reason behind it is not available. Hence sometimes there is no transparency in the analysis. These types of problems are encountered mostly in area of medical, finance etc.

- Ethical and moral concern: Ethical concern is very big problem in AI which needs very careful consideration. The alarming areas mostly are confidentiality, consent and possible misuse of AI in perceptive areas such as national security, criminal justice etc. Moral issues in AI are also very alarming which needs significant thinking in area such as privacy in data, discrimination and transparency deficiency.

- Privacy and Security: Privacy and security is very common problem in AI . AI system often requires lots of sensitive data like personal details, financial records, or health information to work. Keeping that data safe from hackers or misuse of same is really challenging. Question also rises about ownership of the data, whether people understand and agree how their data is used, and how transparent the whole process is. AI system need to find the way through which balance between discoveries and privacy of individual is maintained.

Conclusion:

The study shows that AI plays very important role in research that is why the use of AI is increasing day by day in this field too .There are various applications of AI in research like Data

Original Research Article

Analysis, Hypothesis generation, Automation of task, Literature Review, Experiments with use of Robotics, Modeling for forecasting and many more. On the other hand Quality of data, Transparency, Ethical and Moral Issues, Privacy and Security are some of challenges of AI in research.

Bibliography:

1. https://knowledge.epr.equass.be/article/525-artificial-intelligence-opportunities-andchallenges

2. https://www.simplilearn.com/challenges-of-artificial-intelligence-article

3. https://www.westfordonline.com/blogs/the-future-of-artificial-intelligence-in-it

4. https://statusneo.com/the-future-of-ai-opportunities-and-challenges

5. Gupta R.(Feb. 2023)" Research Paper on Artificial Intelligence "International Journal of Engineering And Computer Science, www.ijecs.in Volume 12 Issue 02 ISSN: 2319-7242,February 2023, Page No.25654-25656

6. Prof. Krishna Reddy (March 2024)"A Study On The Impact of Artificial Intelligence on Indian Businesses" International Journal of Research Publication and Reviews, Vol(5), Issue (3), March (2024), Page – 5721-5733

7. Prof. Neha Saini (2023)"Research Paper On Artificial Intelligence & Its Applications" International Journal for Research Trends and Innovation (www.ijrti.org)/ Volume 8, Issue 4 / ISSN: 2456-3315

Cite This Article: