EFFECTS OF AI ON HUMAN LEARNING AND DECISION MAKING IN MILLENNIALS

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Abstract— The use of Artificial Intelligence is increasing exponentially, and is finding uses in many new sectors, as they progressively discover its benefits. We have tried to understand how Artificial Intelligence has affected the millennials of today in their learning and Decision Making. In our research we will focus on primary surveys of general public with detailed analysis and structuring of secondary surveys as well. The final report will subsequently consist of Graphs with their analysis and proper analysis of the secondary research. The study has adopted an exploratory approach with the use of qualitative methodology, to expand the understanding of the effects of AI on human learning. In this study, the data was collected through an online questionnaire on Google Forms. Through the questionnaire we were able to reach a wide audience of youth living in different areas of the world. We got a total of 104 responses which consist of people with different age groups and different geographical locations. In this research we not only focused on people from India but also from different part of the world. These questions were designed in such a way that we can also see what an individual thinks of AI. Based on our findings, the paper provides a valuable insight into how AI is affecting human learning in various and different ways. AI is helping people by making their work easier and efficient and helping in making decisions, with majority of the respondents agreeing that AI is beneficial for human beings.We also find that AI has not replaced Humans completely but has partially been able to replace humans in some situations. Intelligent tutoring systems have also been shown to be highly effective at increasing student's performance and motivation. This shows us as to how effective AI is in human learning.

Index Terms— Artificial Intelligence, Learning, Human Beings, Millennials, Decision Making,

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1. INTRODUCTION

The article published in Forbes of Press (2019) that uses secondary data shows the current role as well as future scope of Artificial Intelligence around the globe. Here, as indicated by New Vantage in their article [1], 92% are expanding their pace of interest in large information and AI and 62% have just observed quantifiable outcomes. Capgemini in it's survey shows that 36% of those surveyed are implementing AI and AI (MACHINE LEARNING). This has assumed critical importance in their computerized methodology. Currently, 45% OF Economist Intelligence Unit (EIU) respect AI/MACHINE LEARNING as the most significant innovation to assume a noteworthy contributor in their association's advanced system in times to come.

Previous studies indicate that 28% of retailers are using AI today, up from 17% in 2017 and 4% in 2016 [2].
In recent years, 22% are applying progressed examination and AI to anticipate digital interruption dangers, while just 7% apply AI and computerized reasoning in basic leadership or creation work processes, according to State of Malware Report (SMR) in their article TOP MALWARE THREATS in 2018 and 2017. Through extensive research it was found that 86% investigated AI (MACHINE LEARNING) and computerized reasoning (AI) answers for cybersecurity [4]. While the surveys showing their positive effects are reformulated to explain, such as 98% of retailers utilizing AI in client confronting capacities anticipate that the quantity of client protests should diminish by up to 15%, while 99% anticipate that AI should build deals by up to 15% and also 71% of retailers state AI is making employments today, with 68% of the occupations being at a senior level; 75% report that AI has not supplanted any occupations in their association up until now said Capgemini in survey of how retailers worldwide are implementing AI.

Previous surveys have shown the data about how humans are being influenced by the use of Artificial Intelligence and about the use of Artificial Intelligence. Some previously conducted surveys have shown that the life of an average human is affected a lot by Artificial

Intelligence in both positive and negative manner. The use of Artificial Intelligence is increasing exponentially, and is finding uses in many new sectors, as they progressively discover its benefits. Previous surveys were based on primary surveys of professionals in the field while in our research we will focus on primary surveys of general public with detailed analysis and structuring of secondary surveys as well. The final report will subsequently consist of Graphs with their analysis and proper analysis of the secondary research.

Talking about the present tech, AI can copy human insight so that it could play out a wide scope of undertakings, beginning from deduction to getting everything done, learning, critical thinking and significantly more! Consider the case of automated vehicles nowadays. The exceptionally advancing models can possibly navigate through traffic, alter speed as per driving conditions, convert to self-driving vehicles that are, for example, SIRI enabled and can respond to various voice commands, and so forth! Indeed, these developments don't require a driver to control or oversee them. Apart from this, this innovation allowing for automation, is by all accounts growing with wide application in business sectors such as hospitals, schools, defence, music, gaming, quantum science, to name a few. Whenever given a chance, mechanical technology can comprehend, learn, see or finish human exercises on its own. To put it plainly, Artificial Intelligence can possibly copy human character or conduct. Though, as it stands currently, at some point, this innovation may hit a bump because of contrasts in human cerebrums and wired machines.

The structure of our manuscript will be starting from the literature review. The literature review will include the meaning of AI, impact of AI on humans, AI's impact specific to learning and AI in decision learning. Research methodology is the next topic we will be including. The design of the questionnaire was built on google forms. Thereafter, a pilot study was conducted with professionals and they helped us make certain changes to the form to make it better suited for our respondents. Then the questionnaire was circulated amongst our peers who are millennials. The analysis was recorded on google forms itself. Then the responses of all the respondents are taken and converted into tables for analysis by the researchers and final findings presented.

2. Literature Review

2.1 Introduction to Artificial intelligence

"The study [of artificial intelligence] is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." [12]. It clearly states that it is branch of computer science that is concerned in machine learning and deep learning and automatic smart learning in every sector of the technological industry.

Today's Artificial Intelligence (robotics) has the capabilities to imitate human intelligence, performing various tasks that require thinking and learning, solve problems and make various decisions. Artificial Intelligence software or programs that are inserted into robots, computers, or other related systems which them necessary thinking ability. In a new research, the writers want to elaborate that now Artificial intelligence is now at a point where it can do (imitate) almost all the things that the humans can do such as tasks including solving problems and decision making [7]. This imitation can be done by automatic AI devices such as robots, computers.

[5]A broad definition of AI: "Computers which perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving". It has been explained that AI compiles with cognitive tasks of humans.

2.2 AI Effects on humans

AI solutions open a new horizon of possibilities for teaching and learning in higher education. However, it is important to admit the current limits of technology and admit that AI is not (yet) ready to replace teachers but is presenting the real possibility to augment them.

In this the author wants to explain that AI has not been able to replace humans successfully but is able to partially replace humans within certain limits of technology and humans.

2.3 Effect of AI Specific to human learning

Intelligent tutoring systems have been shown to be highly effective at increasing students' performance and motivation. For example, students using Smithtown, an ITS for economics,

performed equally well as students taking a traditional economics course, but required half as much time covering the material. [6]

As mentioned, the systems are helpful to students, as the students are taking just half the time compared to the time taken by them at ITS initially for a course in economics. Thus, this proves that adoption of AI efficiently has increased the performance of the humans and it serves as a motivation for humans to better efficiency and performance.

3. RESEARCH METHODOLOGY

3.1 Research Approach

The study has adopted an exploratory approach with the use of qualitative methodology, to expand the understanding of the effects of AI on human learning. According to Rynes and Gephardt (2004), qualitative research provides insights that are difficult to produce with quantitative methods. [8] It was claimed that qualitative research includes an interpretive and naturalistic approach, "This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret phenomena regarding the meanings people brings to them".

In this study, the data was collected through an online questionnaire on Google Forms.

Through the questionnaire we were able to reach a wide audience of youth living in different areas of the world.

3.2 Description of the Sample

This study was conducted among millennials typically under the age of 25 as of 2020. The questionnaires presents a view on how the youth perceive Artificial intelligence and has given the researchers a deep understanding on the usage of Artificial Intelligence. The questionnaire further continued by asking about the personal profile of the respondents, which included age, gender, city or country. The description of respondent's profile with the frequency and percentage in detail are shown in Table I.

3.3 Data Collection

Data of 104 respondents was collected over a period of 3 weeks, lasting from 2nd March to 16th March 2020. These days online questionnaires are the most widely used ways to collect information and is the most cost-effective way as well. The following questions were

considered during the forms to fulfil the objective of the study:

1. Have you heard about Artificial Intelligence before?
2. What devices do you use in your daily life which use AI?
3. What is your first thought when you

Age	16-20	21-25	26-30	above 30
Total (%)	69 (66.3%)	28 (26.9%)	2 (1.9%)	5 (4.8%)
Country	Canada	India	Others	
Total	9	89	6	

think of AI?
4. Do you think AI is beneficial for humans?
5. What do you think are the advantages of using AI?
6. What do you think are the disadvantages of AI?
7. What kind of decisions would you trust AI with?
8. How do you think AI can impact learning in Millennials?
9. Do you think AI will be widely adopted by the public?

Table I

3.4 Data Analysis

This study was conducted in 3 phases. However, some phases overlapped.

Phase 1: During this time, we built the google form by carefully inspecting each question and making sure all the required information was being asked for in the form. We also had to provide certain formatting features.

Phase 2: Initial data analysis began after the beta study was conducted with the professionals. The google forms were studied and certain changes were made in the questionnaire in order to get maximum information from the respondents.

Phase 3: The changes in the questionnaire were finalised and all inconsistencies were eliminated. By following this process, we were able to shortlist only those questions which were easily understandable by the respondents and were completely relevant to our research. We also took many precautions to make sure that the data we collect is as authentic as we can make it to be. To ensure this, we sent this data to millennials and a deleted some entries which were not authentic.

Phase 4: In the final stages of data analysis, all the researchers selected the most appropriate and valid responses.

In the qualitative research, data collection and analysis may be influenced by the biases of the researcher. Several strategies were employed to collect and analyse data, thus ensuring the quality and integrity of the data [8]. All the researchers were closely involved during the process of collecting and analysing the data. In order to increase the trustworthiness and credibility of this part of the coding process, the refinement took place during an open communication session between the researchers.

4. Result and Discussion

This questionnaire was formed on google forms with about 14 questions. These questions consist of all the necessary details that are required by the researchers to complete this research. We got a total of 104 responses which consist of people with different age groups and different geographical locations. In this research we not only focused on people from India but also from different part of the world. These questions were designed in such a way that we can also see what an individual thinks of AI.

4.1 Age

The age of respondents varies from 16 years to more than 30 years where the responses are as follows: -

Age	No. of responses
16-20	66.3% (69)
21-25	26.9% (28)
26-30	1.95% (2)
Above 30	4.8% (5)

As we can see from the table, majority of the responses were taken from our targeted audience i.e. Generation X or Millennials. About 69% of the responses are taken from the targeted

audience only. This is followed by people with age of 21-25. 28% of the total responses are from this age group. Other 7% responses are from people of age 26 and above.

4.2 Place

In this research we have tried to get responses from all over the globe. Majority of the responses in our research are from the Tricity (Chandigarh, Panchkula, Mohali). There are responses from different states of India such as Himachal, Delhi and Punjab. Alongside, we have gathered responses from Canada, Singapore and Nepal for our research.

4.3 Heard about Artificial Intelligence before?

Based on the information area of the Artificial Intelligence questionnaire, 67 respondents voted for 'YES' that they are aware about artificial intelligence while about 35.6% or 37 respondents voted 'NO' that they have not heard about artificial intelligence before.

4.4 Devices used your daily life which use AI in

Out of all the respondents, the highest are for mobile phone. 97% of our respondents use AI in their mobile phones. After this laptop is used by approx. 72% respondents. There is a draw between PC, smart watch and smart speakers' users which is about 34.3%. The result for the virtual assistant device is very shocking because only 1.5% of our respondents use it.

4.5 First thought about AI

The result of our research shows us that first thought, when AI is mentioned on to our respondents, is all about programming. The other 27% respondents think that it is about voice control. 19.4% of our responds gave us the result that AI is about complex machines. We got some shocking answers to this question also. Only 1.5% of respondents thought of Robots as when asked about what comes to their mind when AI is mentioned.

4.6 Is AI beneficial for Humans?

This question played a good role in our research. 95.5% of our respondents replied in the

affirmative that AI is beneficial for Humans. But we can also see there is a small segment of people i.e. only 4.5% which says thar AI is not beneficial for humans.

4.7 Advantages of using AI

The major benefit was identified as availability of the servers 24x7 according to 70.1% of the respondents.   A close competition between enhancing performance and more efficiency was selected by 59.7% and 56.7% people, respectively. There are approx. 47% of our respondents who have chosen that AI helps in error reduction.

4.8 Disadvantages of AI

The biggest disadvantage of AI according to our questionnaire was cost. Cost was chosen by around 57% of our participants.   This was followed by privacy and less accurate by 43.3% and 31.3% respectively. 4.5% of our respondents also thinks that AI is not efficient. Only 1.5% of our respondents have chosen that it will dominate human and there will be less job opportunities.

4.9 Decisions that can be trusted with AI

Here, maximum number of respondents i.e. around 68% have chosen that only rational decisions can be trusted with AI. Around 39% of respondents think that ethical decisions can be trusted more with AI. Only 14.9% of respondents think that emotional decisions can also be trusted. A small number i.e. 1.5% of respondents think that no decision can be left to AI.

4.10 Adaptation of AI by Public

Depending on various aspects of advantages and disadvantages of AI, 94% of respondents were of the opinion that AI will be adopted by the people in the future. Only 4% of the respondents were against this possibility and thought that AI will not be accepted by people in their daily lives.

5. Conclusion and implication

The purpose of this research is to find the Impact of AI on Human Learning and Decision Making. The data we collected through google form has revealed some interesting facts. In   view of the finding of this study, it can be concluded that

around 63% of the participants are aware about AI. 95.5% of the people who are aware of AI think that AI is beneficial for human beings. The main advantage of AI which is chosen by 70.1% of the people, is that AI is available 24x7. High Cost of AI is the biggest disadvantage among all. From the study we can also conclude that people can trust AI more for rational decisions rather than emotional decisions. Majority of the participants think that all will widely accept AI in the coming future.

Based on our findings, the paper provides a valuable insight into how AI is affecting human learning in various and different ways. AI is helping people by making   their work easier and efficient and helping in   making decisions, with majority of the respondents agreeing that AI is beneficial for human beings.

We also find that AI has not replaced Humans completely but has partially been able to replace humans in some situations. Intelligent tutoring systems have also been shown to be highly effective at increasing student's performance and motivation. This shows us as to how effective AI is in human learning.

6. Limitation and future scope

While most of the research is on millennials of India, so the scope of this research is low. More diversified research can be done so that we can study about their perspective of AI. The study is also based on most people who live in India.

Some future studies can be done on this topic, where they can research about opinion of western millennials on AI. Future studies can adopt real life interviews like face to face and telephonic   interviews   for   more   accurate responses. Lastly, a comparative study of perspective   between   Indian   and   Western Millennials about the impact of AI can be done.

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