# Artificial Intelligence: Perception, expectations, hopes and benefits

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**Abstract.** The study presents the research outcomes regarding the attitude of the students from Timișoara, from humanities and technical specializations, toward the emergence and development of artificial intelligence (AI). How will new technologies transform our lives? Will our workplaces be affected by the emergence and development of AI entities? Will the use of material resources be optimized? Will people's comfort increase? These are just some of the questions we are trying to answer, highlighting the students' attitude at the universities of Timișoara regarding the emergence of artificial intelligence, with emphasis being placed on the most likely consequences of its future development, the benefits that its development would entail. The method used for data collection was the sociological survey and the information gathering tool was the questionnaire, applied online to 928 people. The variables according to which the data were interpreted were the type of specialization (humanistic and technical) and the gender of the respondents (male and female). In general, positive perceptions about the emergence and development of artificial intelligence entities/ devices were recorded , the benefits that it could bring in the future by building sophisticated robots, surpassing human intelligence, the control of intelligent weapons by humans, the emergence of new trades, the improvement of health care and human health, the optimization of material resources, and so on.

**Keywords**: artificial intelligence, advantages, benefits, perceptions..

## 1. Introduction

AI will changes the way in which people interact with the computer and this change will be evident in almost all the activities that are carried on daily. The user interface will be more natural, human-like, based more on speech recognition and even gesture commands. As AI related applications will spread, the difference between human-computer interaction and humans communication will fade out.

Artificial Intelligence is a concept that refers mainly to the ability of a system *"to behave in a way that could be considered intelligent if it were a human being"* (McCarthy, 2007). In other words, to learn by itself, to adapt,

to react in totally new situations. Over the past decade, almost all aspects of how we work or live - from retail, to production or personal care - have become more and more digitized, and AI technologies have begun to be used in a variety of areas (Choi et. al., 2016; Kim et al., 2015; Park et al., 2015; Bostrom, 2014; Muller & Bostrom, 2016; Kurzweil, 2005). Analyses made by McKinsey Global Institute have revealed nearly 600 uses of AI in all major industries (Batra, Queirolo & Santhanam, 2018).

A good question to ask would be the one concerning the people's perception on the benefits that the AI emergence and development could bring to the humanity. The role that artificial intelligence might play in the field of the economy is very complex. According to the PwC report "Sizing the prize," What's the real value of AI for your business and how can you capitalise? ("Sizing the prize. What's the real value of AI for your business and how can you capitalise?", n.d.), artificial intelligence (AI) could lead to global GDP growth by 14% by 2030 and this makes AI the most important trade opportunity in the current economy.

The above mentioned report specifies 3 main factors that would lead to these results: *productivity gains obtained by automating business processes (including by using robots and autonomous vehicles); productivity gains achieved through the development of existing workforce by companies with the support of AI technology (human-assisted and augmented artificial intelligence) and increased consumption demand as a result of the availability of personalized products and services and / or of superior quality due to the improvements made with the help of AI.*

Researchers predict that robots will sooner or later become part of our daily lives by performing roles of simple machines, assistants, aids for certain categories of people, or providing support to humans for other tasks (Gates, 2008). There are many voices who have warned of the risks of rapid progress in the field of AI, which, once gotten out of human control, could harm society. Stephen Hawking, Bill Gates, co-founder of Apple Steve Wozniak, Elon Musk, co-founder of Tesla Motors and many others have expressed concern about a world where artificial intelligence goes beyond human intelligence.

The findings of the study *"Why Are We Afraid of Artificial Intelligence (AI)?"* (Gherheș, 2018) show that there is a perception among consumers that devices equipped with AI will affect interpersonal relationships, that there will be fewer jobs for people, economic crises will emerge, that it will be used to manufacture intelligent weapons, increase military conflicts, take control of humanity and, last but not least, destroy mankind.

When it comes to AI, discussions usually address the risks this technology entails, but the benefits that it could bring to humanity should not be ignored (Masayuki, 2016; Makridakis, 2017; Acemoglu & Restrepo, 2018).

The study *What Consumers Really Think About AI: A Global Study* (n.d.) highlights the fact that there is optimism about the benefits of AI, but also concerns about how businesses use AI. The results presented in *"Future Progress in Artificial Intelligence: A Survey of Expert Opinion"* (Müller& Bostrom, 2016) show that there is about one chance out of three that AI and Superintelligence prove to be "bad" or "extremely bad" for humanity. From the *Eurobarometer: Attitudes towards the impact of digitisation and automation on daily life* (n.d.), it turns out that more than two-thirds of respondents (68%) agree that robots and artificial intelligence are good for society because they help people do their job or fulfill daily tasks at home. The study *"Technical and Humanities Students' Perspectives on the Development and Sustainability of Artificial Intelligence"* (Gherheș & Obrad, 2018), shows that there is optimism among respondents about how devices equipped with AI might affect our lives in the future.

In 2015, the United Nations published 17 Sustainable Development Goals (SDGs) as a roadmap to ensure a sustainable future by 2030. On this issue, in October 2017, at a joint meeting of the UN GA Second Committee and Economic and Social Council (ECOSOC), discussing the topic: "The Future of Everything – Sustainable Development in the Age of Rapid Technological Change", Stephen Ibaraki presented the way in which IA and machine learning technologies will dramatically change the world we live in. AI can play a role in addressing each of the UN SDGs. (www.itu.int/en/itunews/Documents/2017/2017-01/2017_ITUNews01-en.pdf)

The main objective of the study was to capture the subjects' perceptions on the development of artificial intelligence, the benefits that its emergence would imply and its development in the future.

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## 2. Material and methods

The present research was done through a quantitative approach, based on the sociological survey method, and as a data collection tool we used the questionnaire, which was applied online via the Isondaje.ro platform (an online survey service). The questionnaires were applied both to students from technical specializations in universities, as well as to those from humanities, the type of specialization (technical education and humanities education) and the gender of respondents being the variables according to which we have

made the subsequent analyses.

- The answers of 928 students in 1st, 2nd, and 3rd years of undergraduate study programs, from the existing universities in Timisoara were recorded, the margin of error being ±3,2%. In order to satisfy the demanding requirement of having a representative sample for the study population, the choice of the respondents was controlled based on the study program type (humanities, 50.5% and technical studies, 49.5%) and on relatively equal percentages for gender (48. 2% males and 51.8% females), irrespective of the respondents' gender distribution within the humanistic and technical study program.

In the questionnaire we made a series of statements regarding possible scenarios of artificial intelligence development in the future, the subjects being able to choose between the highly likely and the highly unlikely answer, and there are also intermediate variants of answers. The statements were: sophisticated robots will be built, artificial intelligence entities/devices will overpass human intelligence, entities/devices will become independent and will be able to act and make decisions alone, smart weapons will be controlled by humans, new jobs will appear, people will no longer have to work, the robots will work for them, AI will increase the people's comfort, there will be improvements in healthcare, AI will lead to an increase in human longevity, the use of material resources will be optimized, pollution will decrease, there will be more social equity. The objective was to determine the attitudes of respondents to the emergence and development of artificial intelligence, with an emphasis on the positive implications that the development of artificial intelligence in certain sectors of social life might have.

- Table 1. Sophisticated robots will be built * studies

|  |  | studies | | Total |
|  |  | technical | humanities | Total |
|---|---|---|---|---|
| Sophisticated robots will be built | Highly unlikely | 1.1% | 1.5% | 1.3% |
|  | Unlikely | 1.3% | 2.2% | 1.7% |
|  | Neutral | 4.9% | 8.5% | 6.7% |
|  | Likely | 21.1% | 27.2% | 24.1% |
|  | Highly likely | 69.3% | 58.2% | 63.8% |
|  | I don't know, I won't answer | 2.3% | 2.4% | 2.4% |
| Total |  | 100.0% | 100.0% | 100.0% |

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## 3. Results

One of the benefits that the emergence of artificial intelligence would entail would be the construction of sophisticated robots, something that over 87% of respondents consider it possible in the future.

As it can be seen in Table 1, there were differences between students undergoing technical or humanistic studies in the sense that, for the first category, the percentages recorded for the response variant "highly likely" are with about 11% higher than those in the second category.

Depending on the gender variable, there were no significant differences between the response categories. A proportion of 28.3% of the subjects included in the study considers that in the future, artificial intelligence entities/devices are likely to overpass human intelligence, with 36.8% believing it to be quite likely. Cumulating the results obtained for the two categories mentioned above, we notice that over 65% of the total respondents see this scenario as likely in the future, the category of skeptics (those who chose the unlikely answer option - 14.2%, respectively highly unlikely - 6.4%) is considerably lower. No significant differences in respondents' answers or the specialization followed by them were identified for this question.
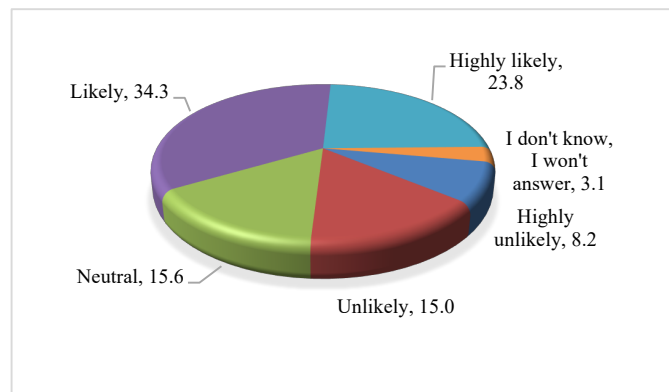


Figure 1. Entities/devices will become independent and will be able to act and make decisions on their own

A somewhat similar situation to that described above is found in the case of the statement that "entities/devices will become independent and will be able to act and make decisions alone", where almost 60% of interviewees consider it a highly likely or likely scenario for the future (Figure 1). And in this case, the category of those who consider this to be unlikely (15%) or highly unlikely (8.2%) is much lower than the category of optimists.

According to the study *Why Are We Afraid of Artificial Intelligence (AI)*

(Gherhes, 2018) nearly three-quarters of interviewees believe that it is highly likely that the AI will be used in the future to create smart weapons. In close connection with this subject, we wanted to capture the views of the subjects about the control people might have on intelligent weapons. The outcomes lead to the conclusion that intelligent weapons can be controlled by humans, 23.2% and 31.9% respectively, considering this as highly likely or likely. There are slight differences in gender-specific differences with regard to this issue, with men being more confident about this scenario (Table 2).

- Table 2. Smart weapons will be controlled by humans * gender

|  |  | gender | | Total |
|---|---|---|---|---|
|  |  | male | female |  |
| Smart weapons will be controlled by humans | Highly unlikely | 4.1% | 8.6% | 6.6% |
|  | Unlikely | 7.4% | 13.8% | 10.9% |
|  | Neutral | 19.1% | 23.0% | 21.2% |
|  | Likely | 36.5% | 28.1% | 31.9% |
|  | Highly likely | 25.8% | 21.0% | 23.2% |
|  | I don't know, I won't answer | 7.2% | 5.5% | 6.3% |
| Total |  | 100.0% | 100.0% | 100.0% |

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- A report published by Microsoft, Future Proof Yourself – Tomorrow's Jobs Future (n.d.) reveals that 65% of today's students will have jobs that do not currently exist. And this aspect has been subjected to our analysis, and the results show that 39.4% of respondents believe that in the future, with the emergence of AI, it is highly likely new jobs will emerge, while 28.9% of the respondents believe it is likely, at the other extreme being the ones who consider this possibility unlikely (9.8%) and highly unlikely (3.2%).

- There were also differences according to the studies variable (Table 3), in which case 43.3% of the students with technical specializations consider this scenario highly likely in the future as compared to the ones from the humanities, where they recorded 35.5%

- Table 3 New jobs will appear * studies

|  |  | studies | | Total |
|---|---|---|---|---|
|  |  | technical | humanities |  |
| New jobs will appear | Highly unlikely | 3.6% | 2.8% | 3.2% |
|  | Unlikely | 8.3% | 11.3% | 9.8% |
|  | Neutral | 13.0% | 16.3% | 14.7% |

| | | | | |
|---|---|---|---|---|
| | Likely | 27.9% | 29.8% | 28.9% |
| | Highly likely | 43.3% | 35.5% | 39.4% |
| | I don't know, I won't answer | 3.8% | 4.1% | 4.0% |
| Total | | 100.0% | 100.0% | 100.0% |

The scenario in which people will no longer have to work, their place being taken over by robots in the future, is plausible. There are numerous reports on the future of jobs, many of which are to be taken over in the coming years by robots, with industrialized countries being the most exposed to these changes. Regarding this aspect (Figure 2), most of the respondents (31.1%) believe that in the future people are likely to stop working, that the robots will work for them. This category is followed by the neutral category of those who consider it highly likely or highly unlikely to happen in the future, with each category accounting for just over 18% of the answers.
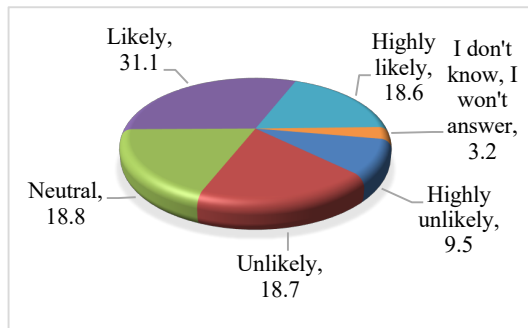


Figure 2. People will no longer have to work, the robots will work for them

Another benefit that the emergence and development of AI might bring is, according to the study, for nearly two-thirds of the subjects, the increase in people's comfort (35.1% believe that it is highly likely to increase and 33% that it is likely to increase).

- Table. 4 There will be improvements in healthcare * gender * studies

| | | gender | | studies | | |
|---|---|---|---|---|---|---|
| | | male | female | technical | humanities | Total |
| There will be improvements in healthcare | Highly unlikely | 2.4% | 3.9% | 3.2% | 3.3% | 3.2% |
| | Unlikely | 5.3% | 12.2% | 6.2% | 12.0% | 9.1% |
| | Neutral | 17.7% | 21.6% | 18.6% | 21.1% | 19.8% |
| | Likely | 40.6% | 32.8% | 36.5% | 36.2% | 36.3% |
| | Highly likely | 31.5% | 23.2% | 32.2% | 21.6% | 26.9% |
| | I don't know, I won't answer | 2.6% | 6.3% | 3.4% | 5.9% | 4.6% |

| | | | | | |
|---|---|---|---|---|---|
| Total | | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

The newly emerging medical technologies make it possible, through applications that use artificial intelligence, to analyze complex medical data, establish diagnoses, treatments, and predict clinical scenarios. All these make medicine more precise. Regarding this aspect, as it can be seen from the table below (Table 4), the majority of respondents included in the study believe that improvements in healthcare will be available in the future (by cumulating the percentages of the likely and highly likely response variants, we obtain 63.8%). There were differentiations according to the respondents' gender, meaning that the cumulative percentages of male respondents are higher than those of female respondents, with the first category being more confident about this scenario.

Differences can also be noticed depending on the type of specialization, in the sense that the proportion of those who consider that it is highly likely that in the future there will be improvements in healthcare, is higher among students attending technical specializations than among those attending humanities specializations. Another question closely related to the previous one is whether, through the emergence and development of AI, substantial improvements in human health will occur. In this case as well, over 50% of respondents consider this to be likely to happen in the future. Asked if AI will lead to an increase in human longevity, most students declare themselves neutral about this aspect (30.8%). As a percentage, those who consider this scenario unlikely cumulate 21.9%, followed by those who consider it likely to happen (17.3%).

- Table 5. The use of material resources will be optimized * gender * studies

| | | gender | | studies | | |
|---|---|---|---|---|---|---|
| | | male | female | technical | humanities | Total |
| The use of material resources will be optimized | Highly unlikely | 4.5% | 8.1% | 4.9% | 8.1% | 6.5% |
| | Unlikely | 10.3% | 15.3% | 13.2% | 12.9% | 13.0% |
| | Neutral | 21.0% | 27.5% | 21.7% | 27.5% | 24.6% |
| | Likely | 37.7% | 28.7% | 32.6% | 32.9% | 32.8% |
| | Highly likely | 21.0% | 14.3% | 22.0% | 12.6% | 17.3% |
| | I don't know, I won't answer | 5.5% | 6.1% | 5.5% | 6.1% | 5.8% |
| Total | | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Another positive aspect that the subjects included in the study foresee, as a result of the development of AI, is that it will optimize the use of material

resources. More than half of respondents believe that this is likely to happen in the future. Among these, almost one third think this is likely to happen (32.8%) and 17.3% that this scenario is highly likely (Table 5). Differences in the results were recorded according to the gender and studies of the subjects included in the study. Thus, as can be seen from the table below, males are more confident about this, compared to females who have a more reserved attitude to this possibility. Moreover, students doing a technical specialization are more convinced of the possibility that, in the future, as a result of the development of AI, the use of material resources will be optimized.

Another issue that was subject to the attention of the subjects was whether, in the future, the development of AI would reduce pollution. As it can be seen below (Table 6), as a general trend, we could say that there are more people who do not believe in the possibility of this scenario than those who see this likely to happen. Cumulative percentages of those who are not confident this would happen (highly unlikely and unlikely response variants) note that their percentages (41.3%) are higher than the cumulative percentages for those who are confident (31.1%). Another observation is that male respondents are more optimistic about the fact that the development of AI will lead to a decrease in pollution, compared to the females included in the study. There is also a more favourable perception of this scenario among subjects doing technical studies compared to those with humanities specializations.

- Table 6. Pollution will decrease * gender * studies

|  |  | gender | | studies | | |
|  |  | male | female | technical | humanities | Total |
|---|---|---|---|---|---|---|
| Pollution will decrease | Highly unlikely | 15.0% | 24.0% | 16.4% | 23.5% | 19.9% |
|  | Unlikely | 17.7% | 24.6% | 20.9% | 22.0% | 21.4% |
|  | Neutral | 22.2% | 22.4% | 21.7% | 22.9% | 22.3% |
|  | Likely | 26.3% | 14.1% | 21.3% | 17.9% | 19.6% |
|  | Highly likely | 13.8% | 9.6% | 14.3% | 8.7% | 11.5% |
|  | I don't know, I won't answer | 5.0% | 5.3% | 5.3% | 5.0% | 5.2% |
| Total |  | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

The impact of new technologies on justice is a topic that has been quite intensely discussed with the arrival of Ross Robot, developed by IBM Watson, which is said to be able to provide legal responses with an accuracy of 90% and which was hired by a large law firm, to give insolvency consultations. There are currently many other digital online dispute resolution platforms with the help of computer algorithms, including court filing facilities by any justice seeker, even if they do not have the necessary

knowledge. There are opinions that the legislation could be made by AI in the future.

Will there be more social equity in this respect? According to our study, 39.9% of respondents declare themselves neutral on this issue, followed by those who consider that it is unlikely (17.3%) or highly unlikely (12.9%) that in the future, with the development of AI, there will be more social equity (Figure 3).
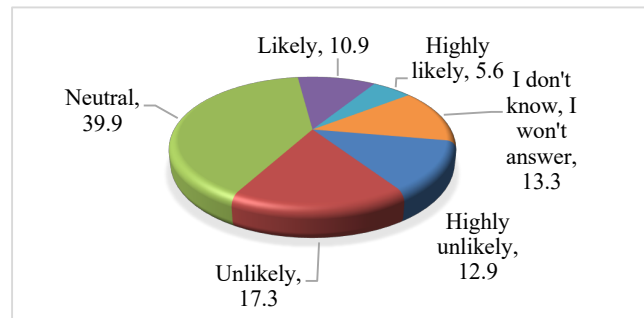


Figure 3. There will be more social equity

## 4. Conclusions:

The field of artificial intelligence can generate concrete benefits in the future. From the analysis of all the answers, the scenario considered to be most likely to happen in the future is the one that, with the development of devices endowed with AI, sophisticated robots will be built (almost 90% of respondents agree with this opinion). Another aspect seen by the subjects included in the study as highly likely to happen in the future is that new jobs will emerge. The job issue is intensely debated at the moment, in the sense that there are many voices stating that some of these will disappear in the future, that the development of AI would lead to people being replaced by robots. Of course, even if these things are going to happen, these changes brought about by technological development will also lead to the creation of new jobs, to the emergence of new trades. More than two-thirds of subjects believe that people's comfort will increase (68.1%) and 65.1% believe that artificial intelligence entities/devices will overpass human intelligence. Significant percentages were also recorded for the scenario where, as a result of the development of artificial intelligence in the future, there will be improvements in healthcare (63.2%), that entities/devices will become independent and will be able to act and make decisions alone (58.1%) and

there will be substantial improvements in human health (56.5%).

Even though the emergence and development of AI is often seen as a real danger to private life and jobs, the real purpose of artificial intelligence is to make our work more efficient, make our lives easier and solve many of the problems which the society, in the fourth industrial revolution, is facing.

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