

WHY ARE WE AFRAID OF ARTIFICIAL INTELLIGENCE (AI)?

VASILE GHERHEȘ

Department of Communication and Foreign Languages, Politehnica University of Timișoara, Romania

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Abstract

The study presents the results regarding the attitudes of students from humanities and technical specializations in Timișoara towards the emergence and development of artificial intelligence (AI). The emphasis was on the most likely consequences of the development of artificial intelligence in the future, especially the negative consequences that its development would entail. The method used for data collection was the sociological survey and the information gathering tool was the questionnaire. It was applied to a total of 929 people, ensuring a sample representativity margin of $\pm 3\%$. The analysis reveals that the participants in the study predict that due to the emergence and development of AI, in the future, interpersonal relationships will be negatively affected, there will be fewer jobs, economic crises will emerge, it will be used to make intelligent weapons, to increase military conflicts, to take control of humanity and, last but not least, to destroy mankind. The results revealed differences in responses depending on the type of specialization (humanities or technical) and the gender of the respondents.

Keywords: artificial intelligence, risks, fear, perceptions.

Introduction

Used for the first time by John McCarthy in 1956, the term artificial intelligence was defined as "the science and engineering of creating intelligent machines" or as "a machine that behaves in a way that could be considered intelligent, if it was a human being"(McCarthy, 2007). The field was based on the idea that human intelligence can be described and defined so precisely that it can be simulated on a computing machine. Ioan Dzițăc, a Romanian author concerned with this field, in the work *Artificial Intelligence* states that "AI can be described as the capability of machines or programs to mimic human thinking processes, such as thinking or learning. Moreover, the subject of AI can be defined as the study of making computers do things for which man needs intelligence to achieve them"(2008, 42). Another definition provided by the author is "the ability of evolved technical systems to achieve quasi-human performances"(2008, 42). In *The English Oxford Living Dictionary*, AI was defined as: "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" and *The Encyclopedia Britannica* states that "artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings".

There are three main categories of AI:

- The first is the narrow artificial intelligence (Kurzweil, 2005), *Artificial Narrow Intelligence* (ANI). It is designed to perform small tasks (for example, facial recognition, searching for information on the internet, making online bookings, driving the car, etc.). It can exceed human performances almost regardless of the specific task, using mechanical learning tools and deep learning tools.

- The second type of AI is the *General Artificial Intelligence (GAI)*, which refers to AI-engineered machines that would be as intelligent as humans and could perform any intellectual task (Pennachin and Goertzel, 2007). The moment of its emergence is still a topic for debate among specialists, being around 2040.
- The third type of AI is the artificial super-intelligence, *Artificial Superintelligence (ASI)*, which is much more advanced than a human being, would exceed him a few billion times in almost any field, including scientific creativity, general wisdom and social skills (Bostrom, 2006). The consequences of the development of super-intelligence are unknown and it is almost impossible to make predictions for this technological leap.

For one out of two experts included in the study "*Future Progress in Artificial Intelligence: A Survey of Expert Opinion*", the span of time for the emergence of AI is expected to be 2040-2050, and for 9 out of 10 it is 2075. In their opinion, super-intelligence will be developed in less than 30 years since the emergence of AI. There is about one chance out of three that this development turns out to be "bad" or "extremely bad" for mankind.

The findings of the study "*Technical and Humanities Students' Perspectives on the Development and Sustainability of Artificial Intelligence*" show that there is a positive attitude towards the emergence of AI. It is believed that this will positively influence the evolution of society, the accelerated development of this field being perceived as a positive thing. Most respondents consider themselves optimistic when they think about what might happen in the future as a result of the development of the AI, but there are equally many concerns about the possibility that entities/devices equipped with artificial intelligence can destroy humanity and replace people in certain activities and trades.

The possibility of creating thinking machines raises a number of ethical issues and dilemmas as a result of the implementation of artificial intelligence. Perhaps one of the greatest threats is the use of AI in the military industry. The scenario in which the use of artificial intelligence could lead to the onset of a nuclear war is very possible in the future, which is why many researchers and scientists have signaled the risks involved in the use of artificial intelligence in the military industry. Thus, at the Buenos Aires Artificial Intelligence Conference in Argentina, Stephen Hawking, Elon Musk and over 1,000 robotics researchers signed a letter, warning of the potential disaster that "autonomous weapons" would have (<https://futureoflife.org/open-letter-autonomous-weapons>). Elon Musk was warning that the ambitions of the great powers to dominate the area of artificial intelligence could cause a new world war. Major advances in AI, along with the development of drones, satellites and other technologies, increase the possibility of tensions between countries and the outbreak of international wars (<https://www.rand.org/blog/articles/2018/04/how-artificial-intelligence-could-increase-the-risk.html>).

Another issue much debated by specialists in the field is the fear that AI will become autonomous and get the opportunity to escape from people's control. There is also the threat that it will lead to the replacement of man by robots, almost in all social spheres. With increasingly more jobs being automated, this would lead to global mass unemployment, with the human presence becoming unnecessary.

Elon Musk, co-founder of Tesla Motors and founder of Space X, said in a post on Twitter that "*we need to be very careful with artificial intelligence because it is more dangerous than nuclear bombs*". (<https://twitter.com/elonmusk/status/495759307346952192?lang=en>).

Being an extremely complex domain that only allows speculation about how AI will influence society, there are not many representative studies that capture the social perception of the population regarding the AI. As this is an extremely complex field, the development of

the AI raises a number of existential problems and a large number of questions we do not have an answer for at the moment. We do not yet know how humanity will look like in the age of artificial intelligence, what changes it will make in the structure of society. This study aims to highlight the attitude of the students from the universities in Timișoara regarding the emergence of artificial intelligence, with an emphasis on the most likely consequences of its future development, the negative consequences that its development would entail.

Methodological aspects

The present research has been carried out through a quantitative approach based on the sociological survey method. The tool used to collect data was the anonymous online questionnaire posted on the Isondaje.ro platform (an online survey service). The data were collected between 5 March and 26 April 2018, the answers of 929 students from the existing universities in Timișoara were recorded, the margin of error being 3%. We chose students as a target group because they represent one of the educated categories of the population, have access to such information, and because in the future they will be the main beneficiaries of the results of the emergence of artificial intelligence. The questionnaires were applied both to the technical specializations in the universities, as well as to the ones with a humanistic specificity, the type of specialization (technical education - humanities education) being one of the variables according to which we have done the following analyses. The groups of respondents were approximately equal (humanities, 50.5% and technical studies, 49.5% and on relatively equal percentages for gender 48.2% males and 51.8% females). We have inserted in the questionnaire a series of assertions about the possible scenarios of artificial intelligence development in the future, with subjects having the choice between the most likely and the least likely answer, and there are also intermediate responses.

The objective was to determine the attitude respondents have to the emergence and development of artificial intelligence, focusing on the negative implications entailed by its development.

The analysis of the results reveals that 84.6% of the respondents consider that they *know* what artificial intelligence means, while 12% declare that they *do not know* what this term means, and 3.4% have chosen the answer *I do not know/do not answer*. Differences of responses have been identified by gender variables and their specialization. Depending on the gender variable, the following situation was recorded: 95.5% of male respondents say they *know* what the notion of artificial intelligence means, compared with 75.6% of females, in other words, males are better informed on this topic (**Figure 1**).

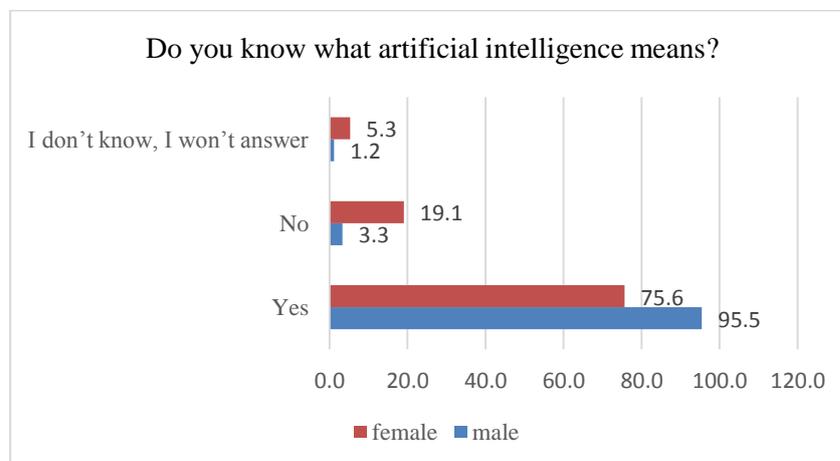


Figure 1

Depending on the same variable, differences were also found for those who declare that they do not know what this concept refers to, when the category of male respondents registered 3.3%, while the female category accounted for 19.1%. There were no very large differences between the categories of respondents depending on the type of specialization (technical or humanistic).

“Entities/devices equipped with artificial intelligence will negatively impact interpersonal relationships” is a statement in which variations in results according to the respondents’ gender and studies have been recorded. For this statement, as a general result, there was an attitude in favor of this scenario, in the sense that 29.6% consider it *highly likely* and 27.1% as *likely* to happen in the future. 18.6% of the respondents declare themselves neutral to this statement, and those who estimate that in the future human relationships will be negatively impacted by artificially intelligent entities/devices are quantitatively lower (*highly unlikely* - 7.5% or *unlikely* - 14.2%). As it can be seen in the table below (**Table 1**), there were differences between male and female respondents in the sense that the first category is more skeptical about this scenario, the negative impact on interpersonal relationship, females being the ones who record higher values in favor of this scenario.

		Male	Female	Total
Entities/devices equipped with artificial intelligence will negatively impact interpersonal relationships	Highly unlikely	9.3%	5.9%	7.4%
	Unlikely	19.3%	10.0%	14.2%
	Neutral	22.9%	15.1%	18.6%
	Quite likely	23.2%	30.5%	27.2%
	Highly likely	22.2%	35.8%	29.6%
	I don’t know, I won’t answer	3.1%	2.8%	2.9%
Total		100.0%	100.0%	100.0%

Table 1

There were also differences according to the type of specialization followed (**Table 2**), in the sense that the respondents who follow technical specializations have accumulated lower values for the response variants that foresee the probability that human relations will be affected in the future by the emergence of entities/devices equipped with artificial intelligence.

		Technical studies	Humanities	Total
Entities/devices equipped with artificial intelligence will negatively impact interpersonal relationships	Highly unlikely	8.5%	6.3%	7.4%
	Unlikely	17.5%	10.9%	14.2%
	Neutral	20.5%	16.8%	18.6%
	Quite likely	23.7%	30.7%	27.2%
	Highly likely	26.9%	32.5%	29.6%
	I don’t know, I won’t answer	3.0%	2.8%	2.9%
Total		100.0%	100.0%	100.0%

Table 2

The possibility of international cyber-attacks is another scenario subject to the evaluation of the respondents. Most of the interviewed students are of the opinion that this is highly likely (34.3%) and quite likely (31%) to happen in the future. Those at the opposite pole accumulate in the total options 14.2%, equal to the respondents who consider themselves

neutral. There were no significant variations in responses based on gender variables and specialization followed by students.

Another aspect subject to evaluation by the students of Timișoara was the risk of losing personal information. The largest category is represented by those who believe that it is quite likely that this will happen in the future (24.8%). The following categories are constituted by those who declared themselves neutral (22.8%) with regard to the issue in question and those who believe that this risk is likely to occur in the future, taking into account the development of artificial intelligence (20.8%).

As it can be seen from the table below (**Table 3**), there were differences in responses according to the gender of the respondents. Cumulating the most likely and quite likely variants of responses, we find that over half of the female respondents (54.2%) believe that by developing AI there will be a risk of losing personal information compared with only 35.1% of the male respondents who see this possibility.

		Male	Female	Total
There is a risk of losing personal information	Highly unlikely	13.8%	5.9%	9.5%
	Unlikely	22.4%	13.8%	17.7%
	Neutral	23.6%	22.2%	22.8%
	Quite likely	19.8%	28.9%	24.8%
	Highly likely	15.3%	25.3%	20.8%
	I don't know, I won't answer	5.0%	3.9%	4.4%
Total		100.0%	100.0%	100.0%

Table 3

Differences were also recorded according to respondents' specialization (**Table 4**). The greatest differences can be noticed in the category of response *quite likely*, where those who follow humanities studies reached 29.2% compared to those who have technical studies, who reached 20.5%.

		Technical studies	Humanities	Total
There is a risk of losing personal information	Highly unlikely	10.4%	8.5%	9.5%
	Unlikely	20.5%	14.8%	17.7%
	Neutral	24.5%	21.1%	22.8%
	Quite likely	20.5%	29.2%	24.8%
	Highly likely	19.8%	21.8%	20.8%
	I don't know, I won't answer	4.3%	4.6%	4.4%
Total		100.0%	100.0%	100.0%

Table 4

According to a specialized report published by Forrester Research Company, the development of Artificial Intelligence (AI) will lead to the disappearance of 24.7 million jobs by 2027. Instead, 14.9 million new jobs will be created, many of them in technology. In the case of our study, 45.4% of interviewees believe that in the future, due to AI, there will highly likely be fewer jobs for people. 31.3% of respondents think this is quite likely to happen, while 8.5% think it is unlikely and 3% is highly unlikely.

Another question that the respondents were asked was whether the development of artificial intelligence would lead to the emergence of economic crises. As it can be noticed in **Table 5** on the total column, as a general score, most of the respondents declared themselves neutral (30.1%), the following categories being those who consider it quite likely (22.8%)

and highly likely to happen (15.2%) in the future. And the category of those who stated they did not know/not respond is significantly higher than for the previous questions. As it can be noticed in **Table 5**, differences were also recorded according to the gender variable. Women are more likely than men to be able to experience economic crises amidst the development of AI (eg 18.7% female vs. 11% male).

		Male	Female	Total
It will lead to the emergence of economic crises	Highly unlikely	9.1%	4.3%	6.5%
	Unlikely	16.7%	13.4%	14.9%
	Neutral	33.4%	27.3%	30.1%
	Quite likely	19.1%	25.9%	22.8%
	Highly likely	11.0%	18.7%	15.2%
	I don't know, I won't answer	10.7%	10.4%	10.6%
Total		100.0%	100.0%	100.0%

Table 5

Differences have been noticed for the studies variable (Table 6), especially for humanities students where, as in the case of female respondents, responses leading to the association of economic crises with the emergence and development of AI were recorded.

		Technical studies	Humanities	Total
It will lead to the emergence of economic crises	Highly unlikely	7.9%	5.0%	6.5%
	Unlikely	15.8%	13.9%	14.9%
	Neutral	32.2%	27.9%	30.1%
	Quite likely	19.4%	26.4%	22.8%
	Highly likely	13.9%	16.6%	15.2%
	I don't know, I won't answer	10.9%	10.2%	10.6%
Total		100.0%	100.0%	100.0%

Table 6

As it can be noticed in **Figure 2**, almost three-quarters of respondents consider it highly likely (39.1%) and quite likely (35%) that in future the AI will be used to create intelligent weapons. There were no very big differences between the categories of respondents according to the type of specialization (technical or humanistic) or gender (male or female).

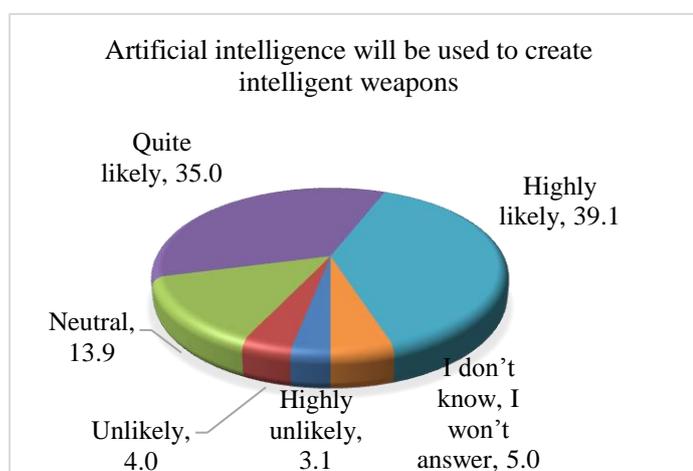


Figure 2

A statement subject to evaluation by the respondents was whether artificial intelligence would lead to increased military conflicts. In this respect, we find out that the views of the subjects are rather in favor of this scenario, of the likelihood of this happening in the future (over 50% of them considering this possible). These categories are followed by the indecisive who have accumulated a score of 22%. Cumulatively, 19.4% of interviewees believe it is highly unlikely and less likely that artificial intelligence will lead to increased military conflicts (**Figure 3**).

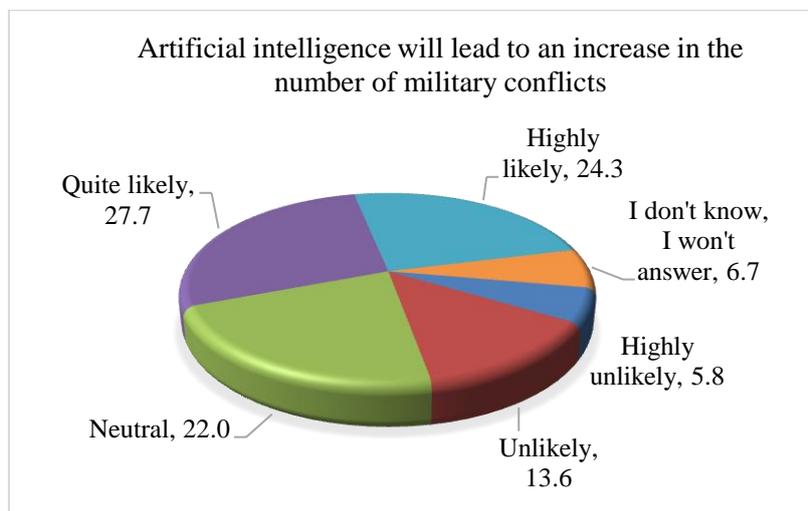


Figure 3

Another aspect researched in the study was whether artificial intelligence would no longer need people to evolve. From the analysis of the answers, about a quarter of the respondents (25.9%) consider that this is quite likely to happen, 19.6% that it is unlikely and 18.9% highly likely. The lowest score was recorded for the highly unlikely response variant (12.4%). The scenario that in the future, following the development of AI, the entities/devices become independent and able to act and make decisions on their own is for most respondents quite likely (34.3%) and highly likely (23.8%).

The taking over of humanity by artificially intelligent entities/devices is another scenario subject to the attention of the interviewees. Most respondents consider this to be unlikely to happen (21.3%), followed by those who offered the variant quite likely (21%) and highly unlikely (20.4%).

Different results according to respondents' gender and the studies they follow have been recorded in this question. As it can be seen in **Table 7**, for males the likelihood that in the future artificial intelligence entities/devices will take over humanity is lower than for females.

		Male	Female	Total
Entities/devices equipped with artificial intelligence will take over humanity	Highly unlikely	25.8%	15.9%	20.4%
	Unlikely	25.8%	17.7%	21.3%
	Neutral	18.6%	21.0%	19.9%
	Quite likely	17.2%	24.2%	21.0%
	Highly likely	8.8%	16.7%	13.1%
	I don't know, I won't answer	3.8%	4.5%	4.2%
Total		100.0%	100.0%	100.0%

Table 7

The studies variable also influences the answers to the question in the sense that for people doing technical studies the scenario of the taking over of humanity by entities/devices equipped with artificial intelligence is considered less likely compared to those who follow humanistic studies, the values recorded in this case being higher (**Table 8**).

		Technical studies	Humanities	Total
Entities/devices equipped with artificial intelligence will take over humanity	Highly unlikely	22.6%	18.1%	20.4%
	Unlikely	25.8%	16.8%	21.3%
	Neutral	19.8%	20.0%	19.9%
	Quite likely	17.3%	24.8%	21.0%
	Highly likely	10.4%	15.9%	13.1%
	I don't know, I won't answer	4.1%	4.4%	4.2%
Total		100.0%	100.0%	100.0%

Table 8

As it can be seen in the figure below (**Figure 4**), the opinions recorded for the scenario where artificial intelligence will conclude that people pose a threat know a more uniform distribution of responses. The largest category is of those who declared themselves neutral in this respect (21.9%), with the rest of the opinions recording a somewhat symmetry of the scores. Differences have been recorded according to the gender of the respondents to the response category which states that this scenario is highly likely to happen in the future.

For the above mentioned variable, the male respondents recorded 12.2% of the responses compared to the female respondents who recorded 20.2%. Variations in the scores for the same response variant (highly likely) were also recorded according to the type of specialization of the respondents, in the sense that for those with technical studies the registered value was 13.2% compared to those with humanities where it was 20%.

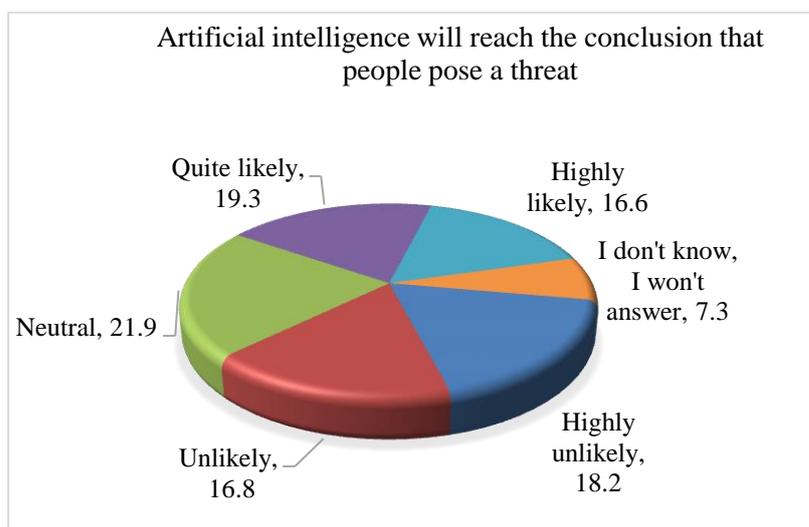


Figure 4

The last question being analyzed is whether humanity will be destroyed by artificial intelligence. The category with the most responses is of those who think this is likely to happen in the future (20.9% of total responses). This category is followed by those who declare themselves neutral on this issue (19.8%), those who believe that this scenario is unlikely to happen (18.9%) and those who claim to be unlikely (17.7%) to be a consequence

of the development of the AI. 16.8% of respondents opted for the highly likely variant. We can notice that there is a balance between those who consider the scenario as being likely to happen and those who consider it less likely (by accumulating the scores obtained in the variants of the answer highly likely and quite likely we obtain a total of 37.7% and by cumulating of highly unlikely and unlikely we get a total of 36.6%).

			Male	Female	Total
Humankind will be destroyed by artificial intelligence	Highly unlikely		25.3%	13.6%	18.9%
	Less likely		22.2%	13.9%	17.7%
	Neutral		20.0%	19.6%	19.8%
	Quite likely		15.5%	25.3%	20.9%
	Highly likely		11.9%	20.8%	16.8%
	I don't know, I won't answer		5.0%	6.7%	5.9%
Total			100.0%	100.0%	100.0%

Table 9

As it can be noticed in **Table 9**, between males and females there are differences regarding the scenario where mankind will be destroyed by artificial intelligence. Females predict that the apocalyptic scenario will happen in the future (by cumulating the scores obtained with the answers highly likely and quite likely we obtain a total of 46.1%), unlike males (the recorded values cumulate for both variants a total of 27.4%).

		Technical studies	Humanities	Total
Humankind will be destroyed by artificial intelligence	Highly unlikely	23.2%	14.4%	18.9%
	Less likely	21.5%	13.7%	17.7%
	Neutral	19.0%	20.7%	19.8%
	Quite likely	16.4%	25.5%	20.9%
	Highly likely	14.7%	19.0%	16.8%
	I don't know, I won't answer	5.1%	6.8%	5.9%
Total		100.0%	100.0%	100.0%

Table 10

The results presented in **Table 10** highlight the differences between respondents according to the studies they follow. We find higher percentages for the likelihood that mankind will be destroyed by artificial intelligence in respondents with humanistic studies (44.5%) compared to those with technical studies where 31.1% of the responses were cumulatively recorded.

Conclusions

Concerns about the emergence and development of AI are understandable given that currently only possible scenarios of what might be in the future are being circulated. The perception of the majority of students (56.7%) in Timișoara is that in the future it is possible that human relationships are affected by the emergence and development of devices equipped with artificial intelligence. Besides, the results of the study also highlighted the fact that most interviewees believe that AI entities/devices will make international cyber-attacks possible (65.3%). Approximately three-quarters of the respondents believe that fewer jobs will be available in the future, and a third of them see scenarios of economic crises, all due to the emergence and development of AI entities/devices. Regarding the fact that AI will reach the conclusion that people pose a threat, there was a balanced distribution of responses, in the sense that the percentage of those who see this scenario as plausible is roughly equal to those

who do not entertain this possibility (about 35%). A similar situation is found in the case of humanity being destroyed by AI, and for this scenario there is a uniform distribution of opinions among those who have this fear and those who are more reserved to this hypothesis.

It is very likely that a large number of our representations of AI entities/devices are greatly affected by SF books and films, which in most of them describe an apocalyptic ending for humanity. If at present, at the professional and industrial level, we can notice an increase in interest in the development of AI systems that only increase the “power” of humans, perhaps we should also think in the future that intelligent systems might change life for the better, from improving communication to improving medical, transportation and environmental protection services.

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