In regards to this area, ethical researchers should investigate the usefulness and necessity of living creatures being should also ensure that they address this issue in a clear manner publicly. Researchers should remain aware that the frontier between nature and robotics may be blurred by this biomimetic approach. If a robotics project seeks almost perfect resemblance between a robot and a living being in any channel of communication or perception, researchers must consult their institution's operational ethics committee. Researchers should also stay aware that a biomimetic approach can blur the line between nature and robotics. If in any channel of communication a robot seeks almost perfect resemblance of a living being, researchers must do extensive research on the limit of human-like characteristics a robot can possess.

3. Robot-Aided Therapy and Human–Robotic Augmentation

One of the major fields of application in robotics is medicine, more specifically, surgery. Medical robots and artificial limbs are small examples in a sea of applications. Artificial limbs help with providing functions that are missing in patients, as can be seen in an artificial leg. By this technology, the patient feels less like a burden, and more independent to carry out responsibilities and simple everyday task that may have seemed all too difficult at some point. The main thing to consider with such technology is that while it is seemingly harmless, we need to consider that these devices have the ability to be exploited for the gain of personal information, or causing vulnerabilities to the patient. A lot of considerations need to go hand in hand with robotics and medicine. Scientists working on robotic technologies for enhancing the human life need to make sure that whatever augmentations made, are reversible. Such devices need to be easily removable without causing any impairments or the loss of existing functions in the human body. Scientists should also make sure to preserve the independence of patients by making them in control of their actions as extensively as possible.

B. Self-Driving Cars:

Background

Vehicular accidents are one of the primary causes of death in the world. By introducing the new and innovative idea of automated cars, we can reduce this likelihood and prevent a large 5 million human casualties and over 50 million grave injuries. Self-driving cars have first been introduced in 1926 by Houdina Radio Control in New York City. The main architecture for automation in that car was the use of a transmission antenna. Since then, automobile companies have been coming up with innovative features to implement in their newer models. A self-driving car can operate fully without the need for human intervention and control; that is achieved through multiple sensors implemented in the automobile allowing it to sense its environment, differentiate between different kinds of objects that it detects and it can depict the collected information from sensors to identify suitable navigation paths and at the same time fulfilling transportation rules.

Ethical Issues

The main ethical issue with self-driving cars is in regards with the effects of how different ethical frameworks should be applied in the context of inevitable accidents where critical life and death decisions need to be made by the technology, and how this choice of ethical framework affects this technology's acceptance by the public. In the event of a grave situation, should the vehicle be trusted to make a better decision than the driver or should the driver be given back control over the automobile? The embedding of ethics in decision-making of an automated car, particularly in the case of fatal accidents, would most definitely affect the technology's acceptance by the population. A lot of research has been done on the benefits of self-driving cars and how it would impact the acceptance of the public of the technology; however, the ethical aspects are barely considered, and when they are, it is indirectly or mainly focused on privacy. The problem related the ethical aspect of self-driving cars is that researchers mostly pertain to one ethical framework, which is Utilitarian, and not considering different frameworks. The Utilitarianism ethical framework can be described as "normative ethical framework that considers as the best action, the one that maximizes a utility function by considering the positive and negative consequences of the choices pertaining to the decision. It is a form of consequentialism where the decision maker tries to think of all possible good or bad consequences of acts, and then by weighting them against each other, to determine which action will generate the most positive outcome" [5]. However, this ethical framework raises many questions, in the probable case of an accident, should the self-driving car follow the slightest amount of harm method? If yes, then who is it for? The passengers or the pedestrians?

It can be clearly observed that this is not the best ethical approach to take in such critical cases. AI related ethics are a pivotal issue; therefore, there is a demand that it is integrated in the decision-making algorithm of the autonomous car. The circumstances are even further complex when we consider indirect ethical factors related to the trust and security of a self-driving car. The operations of the car could be manipulated; resulting in a bypass of the original decision making-process of the car, also known as smart-car hacking. This infers that the decision the car makes and the behavior it acts upon rebuts its original embedded ethics; giving a third party full control to enforce their own rules. With that being said, it is evident that this domain demands more emphasis towards its research in ethical matters.

Results

A survey was conducted to capture the data used for this research. The survey was created using Google Forms and was sent to a random sample of people with ages ranging from 12 to 50+. The questions were about whether the recipients believe that the existing codes of ethics are enough for artificial intelligence, and whether they implement these ethics in their use of artificial intelligence. We emphasized on the important aspects of ethics, which are privacy, safety, morality, honesty, and the independence of machines. The questions were all multiple-choice questions; some of them had text-based answers while others provided a numerical scale ranging from 1-5 and 1-10 for more accuracy. The results were then analyzed for results using the data provided by Google Forms, with the help of graphs and charts. The total number of responses was 72, from different age groups: less than 12, 12-18, 19-30, 30-50, more than 50. The majority of the respondents (76.4 %) were from the age group 19-30. (Figure 1)

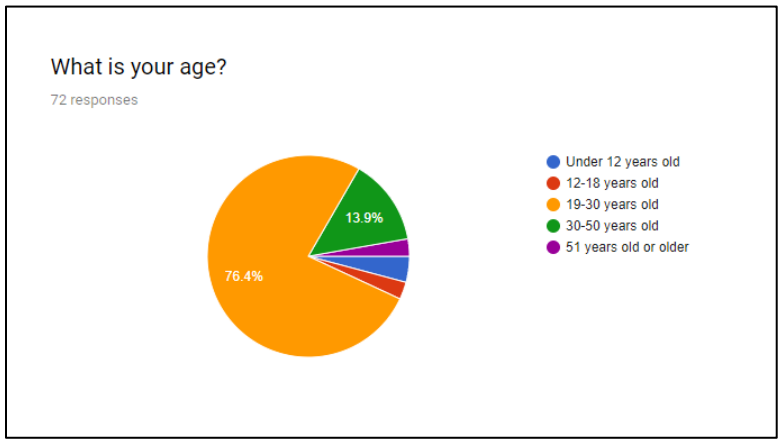

Figure 1

According to the results, majority of the participants were from females and males with a high school degree or equivalent. Several of the votes were with a Bachelor's degree, some with a Master's degree, and very few with a Doctorate. (Figure 2)

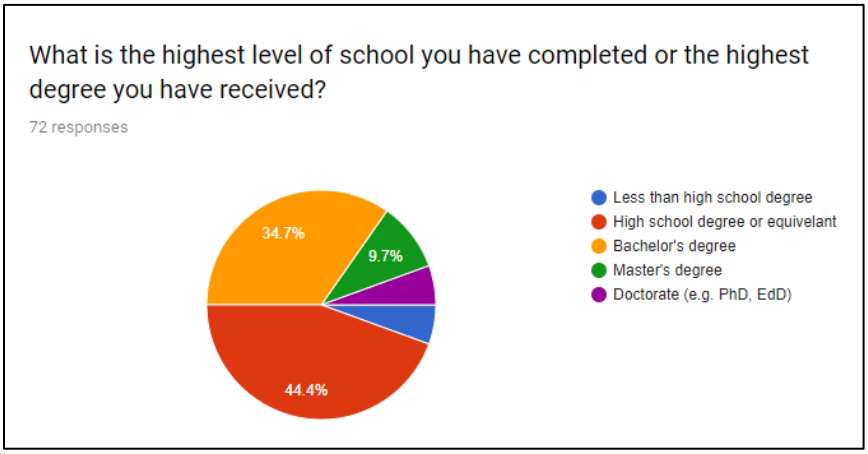

Figure 2

To know how to analyze our survey, we asked the recipients of what they thought AI was, to know what their knowledge about artificial intelligence was. The results here show that most recipients, 63.9%, in fact know what artificial intelligence is. The remainder of the sample had a sheer knowledge of AI. (Figure 3)

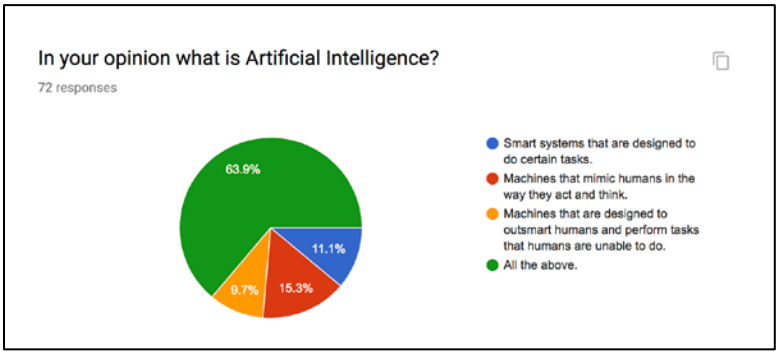

Figure 3

The results show that an equal sample of 29.2% of the participants chose 3, 4 and 5, which are the highest degrees, meaning they agree that they consider the impact of the information they obtain with artificial intelligence; in terms of how ethically the information obtained was written. (Figure 4)

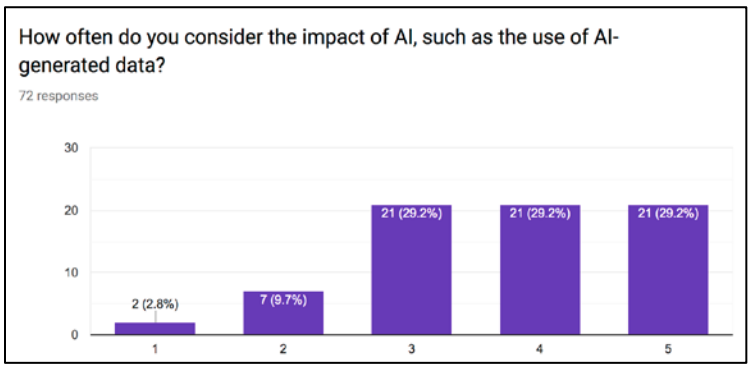

Figure 4.

As can be seen here, an equal sample of 29.2% of our participants consider the basic ethical standards we as humans consider in our everyday use of artificial intelligence, such as not using it for the harm of others, or stealing other peoples work. (Figure 5)

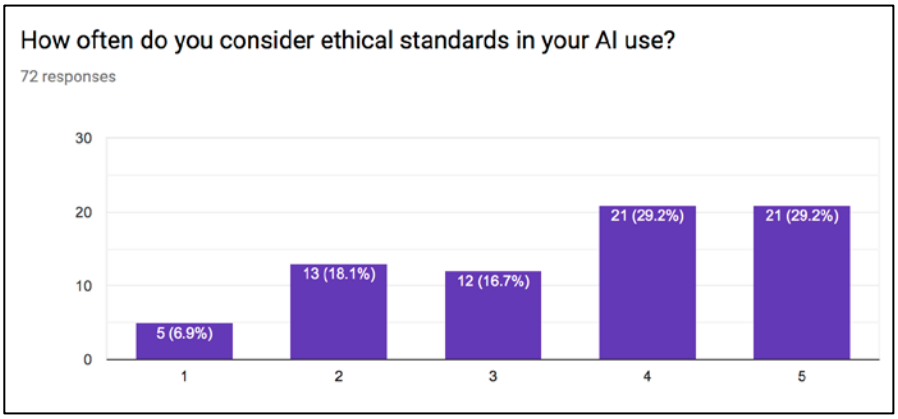

Figure 4

Figure 6 shows that half of the participants, 51.4%, believe that ethics should be a prime consideration in the use of artificial intelligence systems in the sense that it is one of the first things they appraise when interacting with such systems. Figure 7 shows that a large number of the participants, 61.1%, agree that AI should not be used to harm any living creatures, that being humans or animals, which are basic moral rights. After these previous questions, the participants were asked to choose a number

they would assign to the given question. As can be shown, 44.4% agree that we should implement and incorporate our own human and moral ethical standards when using artificial intelligence (Figure 8).

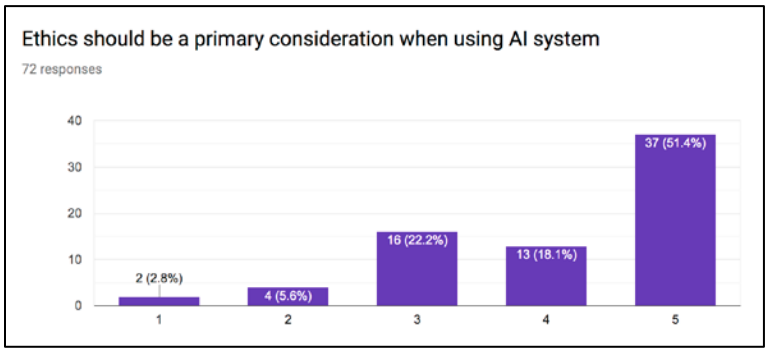

Figure 5

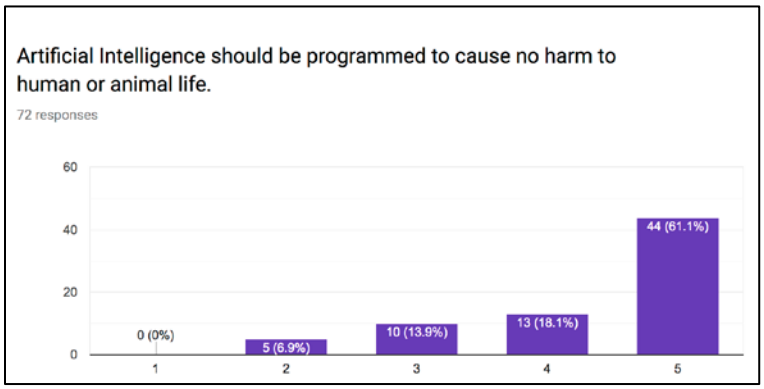

Figure 6

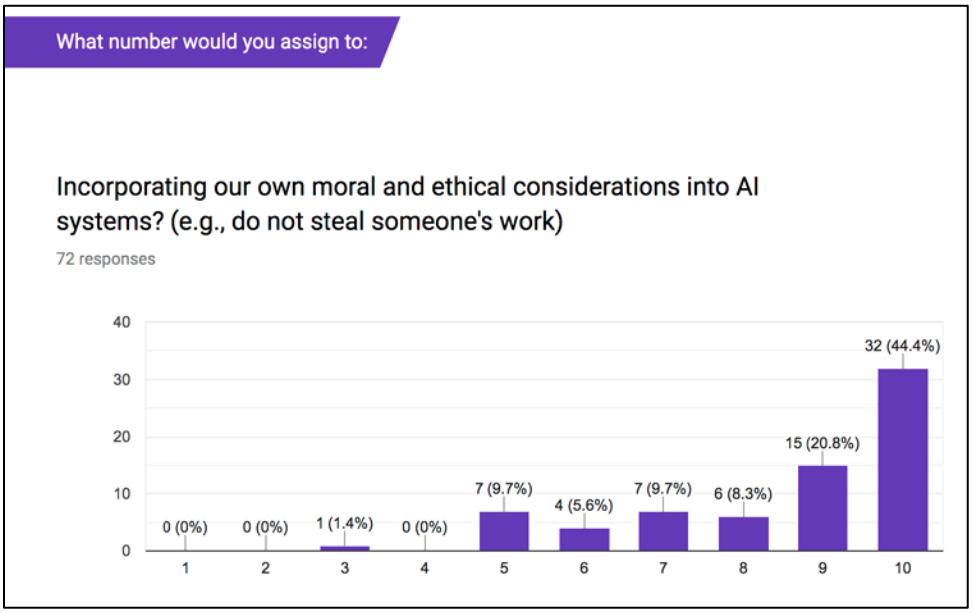

Figure 7

It can be seen that 45.8% of the participants agree that we should absolutely incorporate our human moral values that we are expected to practice everyday. While the second highest percentage, 13.9%, believe that we also should, but not as much as the first sample. As shown here, half of the participants chose fully agree that we should incorporate our human values in the

practice of AI systems. While the rest similarly agree on the proposed question.

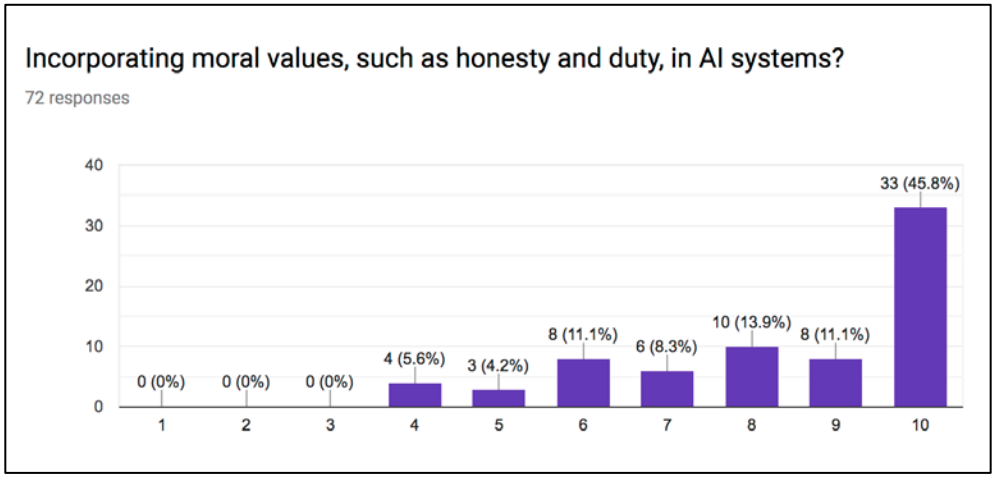

Figure 8

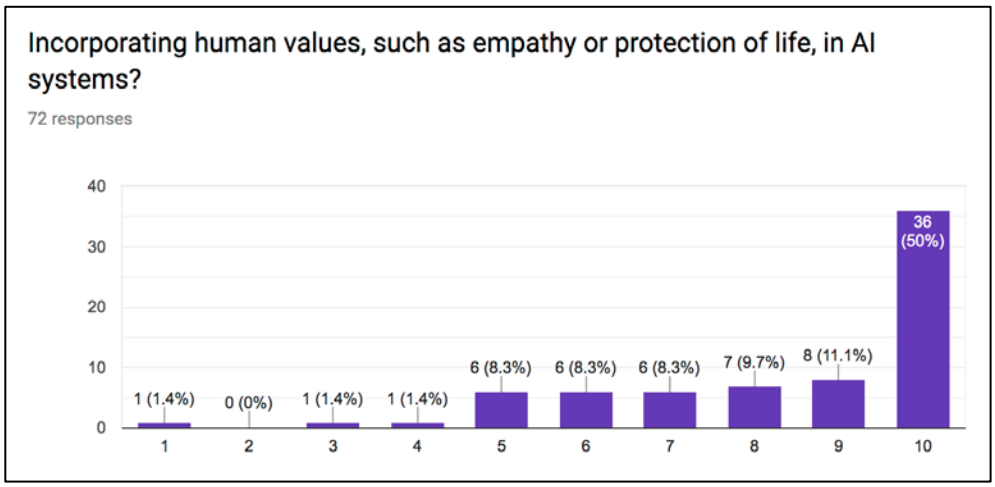

Figure 9

Discussion

From the results shown above, it can be witnessed that the majority of the sample have background knowledge of what artificial intelligence systems are and what they operate for, while the remainder of the sample had a basic understanding of some of the functionalities of AI systems; therefore their responses to the survey questions are viable for the intended purpose. It is seen that when dealing with information for personal work, the participants consider how this information was ethically written and published when obtaining it, which complies with IEEE Code of Conduct no. 3, which is to be honest and realistic in stating claims or estimates based on available data; meaning that even when you obtain and credit sources, you need to consider how this information was obtained by the author.

It can be observed that most people consider ethical standards often when interacting with the technology. This implies that while we are unsupervised when using artificial intelligence system, it is only in our human nature to follow our ethical standards. This is further supported by over half of the sample agreeing that whenever interacting with such systems, they believe that ethical use should be a primary consideration. This complies with ACM Code of Ethics no. 2.2, which is to maintain high standards of professional competence, conduct, and ethical practice; meaning that whenever using intelligent systems, we should always consider practicing them ethically. When it comes to artificial intelligence being programmed to harm humans or animals, essentially disrupting the safety of such living creatures, almost all of the participants agreed that no such thing should exist. In fact, the main purpose of artificial intelligence is to enhance the human life, not the other way around. This

complies with IEEE Code of Conduct no. 1, which is to hold paramount the safety, health, and welfare of the public; which is what we should always strive to do when developing any technology.

We can also find that most of the participants believe that we should incorporate our own ethical considerations and moral values, as humans, in the usage of artificial intelligence systems. In other words, our own existing ethical standards and morals need to be exercised while conducting work with AI. This statement complies with The Software Engineering Code of Ethics and Professional Practice no. 6.01, which is to help develop an organizational environment favorable to acting ethically; which promotes considering general ethics in any situation. Finally, after studying and analyzing the ethical issues in artificial intelligence systems, we concluded that there were no special cases that Software Engineering Code of Ethics and Professional Practice, IEEE Code of conduct and ACM Code of Ethics do not cover. However, with the vast development of computing nowadays, we believe that a code ethics pretaining to artificial might be a must when it comes to sensitive cases involving the safety of humans primeraly.

Recommendations

Based on the questions we proposed, all of the cases were covered by the existing codes of ethics mentioned above; evidently leading to the conclusion that we do not need an artificial intelligence code of ethics. However, it can never be assured that these codes will cover evolving AI cases in the future. Technology is always evolving, introducing opportunities, which exceed the human imagination; with that, new ethical issues and questions would surely take place. And while we do not need any codes of ethics in the time being, the idea of a code of ethics pertaining to artificial intelligence should be of concern to ethical researchers.

Conclusion

Artificial intelligence is practically the new generation of humans, being that it discovers the answers to various hard problems, in a way that is exactly like humans. As a matter of fact, AI is smarter than humans; in the way it quickly detects and solves complex tasks. Because of the vast development of artificial intelligence machines, it can be seen that they are applied widely applied everywhere nowadays, in medicine, military, and education. For that reason, ethics in this particular field has been an ongoing discussion, with researchers investigating how ethics can be applied in AI. Computing professions already possess various codes of ethics like Software Engineering Code of Ethics and Professional Practice, IEEE Code of conduct and ACM Code of Ethics, which were discussed in this paper. Our research aims to investigate whether these existing codes of ethics are enough for artificial intelligence or whether we need a new code of ethics. Finally, we have concluded that the mentioned codes of ethics cover all the ethical cases discussed. While we have been able to apply these existing codes of ethics, we believe that a code of ethics pertaining to AI should be looked into; as artificial intelligence is being applied in almost all systems nowadays, meaning more complex ethical issues might arise.

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