"SOCIAL ACCEPTANCE OF ARTIFICIAL INTELLIGENCE [AI]"

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Abstract: Artificial Intelligence (AI) is finding more uses in the human society resulting in a need to study the relationship between humans and AI. The human – computer interface design involves computer graphics, sound synthesis, speech synthesis, speech recognition and haptics (3D touch). Artificial intelligence is proved to be of great advantage for not only one but numerous different disciplines like engineering, management, robotics, medicine, e-services, transportation, agriculture, metallurgy and so on. The impact of these developments is seen in the society. The scientific journey over last 50 years will be examined to understand the Human-AI relationship, and to present the nature and the role of trust in this relationship .This research is conducted to study the response of humans on the developments in technology specifically in the field of artificial intelligence.

Keywords: Artificial Intelligence, AI-Human relationship, haptics, voice and face recognition, biometrics, robots, humanoid robots.

1. Introduction

During World War II, the first computer was invented, by **Charles Baggage** (Father of the computer). Babbage was working on a project known as the "Difference Engine", which provided the groundwork for a programmable computer.

Soon after that in 1950, when AI was not even coined and we had Alan Turing already thinking if a machine could think like a human. Turing had published a paper named "Computing Machinery and Intelligence". The paper opens with the verse,

> **"I propose to consider the question,**
> **Can machines think?"**
> **-Alan Turing**

The technology has grown to an extent where we do have machines who can not only think , but also move , see and feel just like humans.
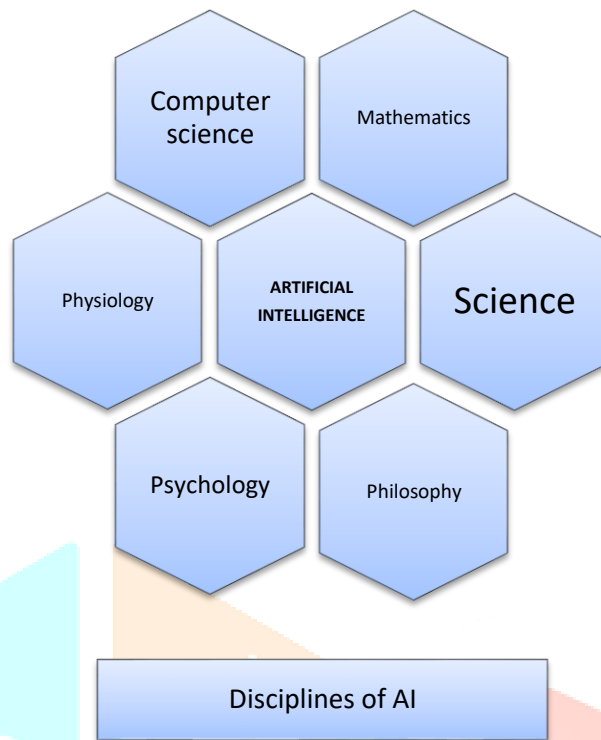
In October 2017, a humanoid robot named 'Sophia' became the first robot to receive citizenship of any country. Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics. Sophia uses artificial intelligence, visual data processing and facial recognition. Sophia also imitates human gestures and facial expressions and is able to answer certain questions and to make simple conversations on predefined topics (e.g. on the weather).

The coining of the term Artificial Intelligence originated in an IBM – sponsored summer workshop at Dartmouth, New Hampshire, USA, in June 1956.

Artificial Intelligence can be defined as, "The art and science of bringing learning, adaption and self-organization to the machine."

AI, in essence, is not only the science of computation but also the logic of cognition.

In today's context , largely ,but of course not exclusively artificial intelligence is related to computer .Therefore, study of AI also involves other disciplines including Psychology , Philosophy , Science , etc. .

Disciplines of AI

The conceptualization and progressive development of AI was started in 1940s; however it was John McCarthy, Stanford University researcher, who first coined this term.

John McCarthy is popular as the father of artificial Intelligence.

The basic uses of AI in today's world are –

- Voice recognition by a computer system
- Image Interpretation
- Face Recognition
- Technology of Biometrics-
- Driverless Vehicles
- Communication with Machines, Etc.

Application of AI techniques in network intrusion detection systems (IDS) protects computer and communication networks from intruders.

The robots in companies are used where vast production is achieved in given time complexity with the help of robots. This is directly or indirectly is proved to be a helping hand for humans.

AI is also doing its magic in the field of medical sciences. The AI is used in hospital system in developments such as patient monitoring system , drug delivery system, hospital administration , ward management and clinical testing (pathological, microbiological),radiographic images(CT and ultra sound , MRI) ,and signals(EEG,ECG,EMG).

The most effective contribution of IT and AI together is the telemedicine and robotics in surgery.

Producers and traders of agro goods are main benefactors of expert systems applications in agriculture. Some of the important expert systems in this area are WHEAT COUNSELOR. It is used for two purposes: buying guide for farmers shopping for agrochemical, and as sales aid for chemical manufacturing sales people.

Robotics is one of the prime areas of AI applications as shown in the 3D view of AI. Robots are proving to be effective at basic tasks and jobs. Robots are prone to fewer errors, require less downtime, and are more cost-effective.

A humanoid robot is a robot with its overall appearance based on that of the human body. For a latest update in robotics, a humanoid robot "Fedor" is the first humanoid robot sent into space by Russia. Fedor copies human movements, a key skill that allows it to remotely help astronauts or even people on Earth to carry out tasks while the humans are strapped into an exoskeleton.

There is numerous expert systems developed software, which assist in most of the disciplines and domain of computing.

The concept of Artificial Intelligence is been clearly described in the above introduction section.
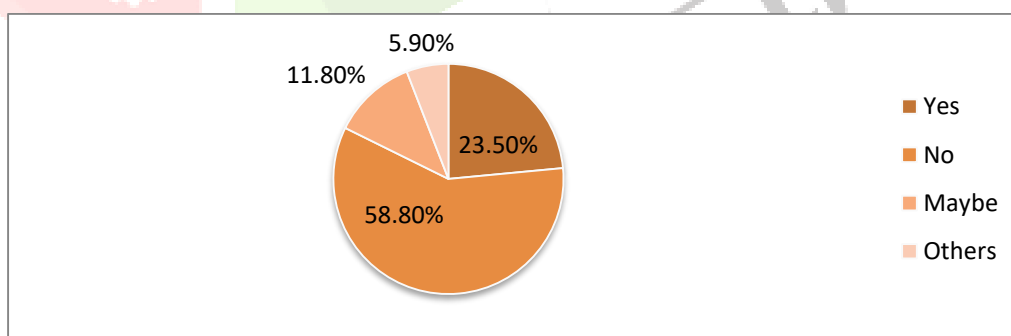
2. Observation

AI acquires a respectable position with a warm welcome in the above given applications. Though the technology developments will be constant in the coming future, this research is to study whether to what extend these developments are accepted by society.

Today, it is increasingly common for people to use or come into contact with robots in various situations at home and in retail stores, hotels and hospitals. Robots are classified into several types based on their functionality and appearance. The Nomura Research Institute ,Ltd(NRI)has conducted a consumer survey in Japan ,the U.S. and Germany on the topic of robots and artificial intelligence(AI).In Japan , respondents often associate the term "robots" with "humanoid robots" that can communicate with humans and they have a high level of familiarity with robots.

To study the "Social Acceptance of AI ", a survey was carried out by sending questionnaire to maximum people to know about the thoughts they have related to AI. Google forms were distributed as a medium to record the responses. The questionnaires were created after studying the applications of AI in daily life of humans. Following are the questions and the responses received:-
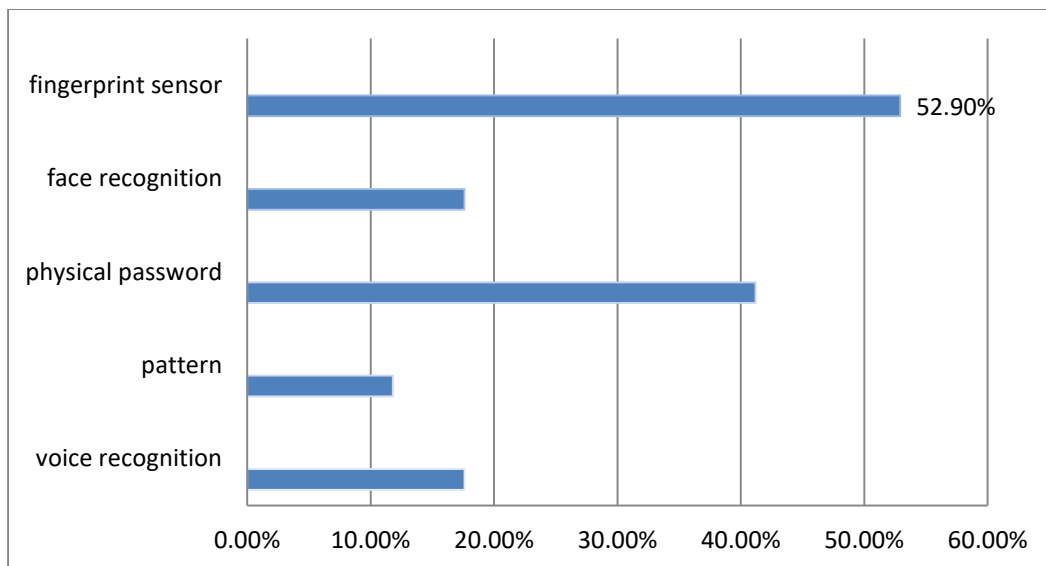
I. **Is 'Human robots' the first thing that comes in your mind when you think of "robotics"?**
The response to this question is shown in the form of pie chart below:

According to the response, it is clear that people are well verse with the point that robotics or artificial intelligence is not restricted with only robotics. Though human robots are a part of robotics, robotics does not consist of human robots only. The application of robotics in the fields other than humanoid robots is in manufacturing, mining, medicine (surgery).

The survey of Normura Research Institute was done in the year 2017, the scenario then is totally reversed now. It can be said that the awareness of AI has been increased then before. As the products that uses AI are used by a mass population i.e. AI features in smart phones.

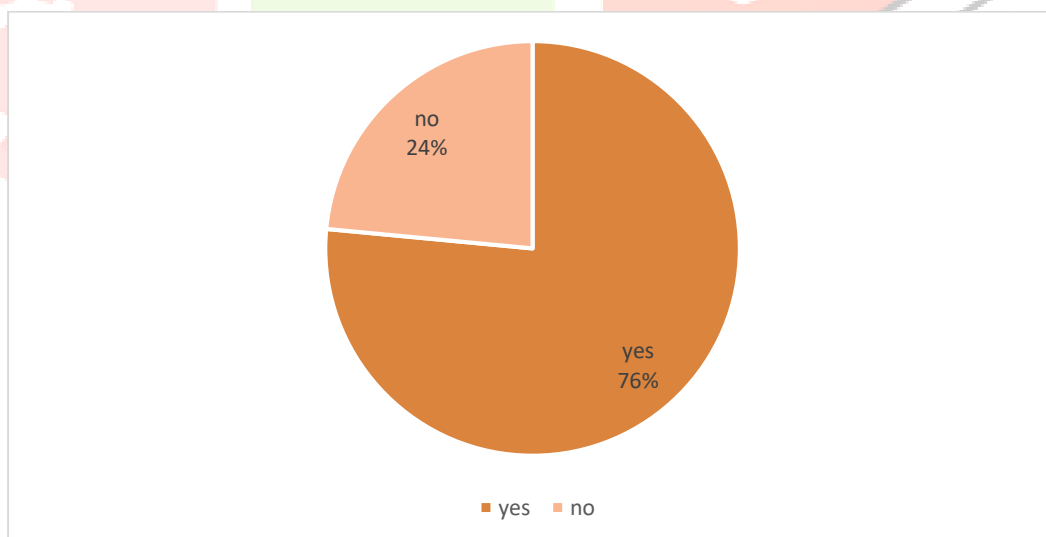**II.   What means would you prefer for a strong security purpose?**

From the chart it is observed that the maximum response is given for the fingerprint sensor. Fingerprint authentication systems are a widely trusted, ubiquitous form of biometric authentication, deployed on billions of smart phones and other devices worldwide.

Among the given options the strongest security option is "voice recognition", but very few prefer it as it is not available in many budget devices and the technology is of high-cost and hence the uses are limited. On the other side, fingerprint sensor is easily available in all types of smart phones, organizations, colleges, etc for security purpose.

For example, in university now a day, a fingerprint sensor is used to mark the attendance and also to identify the staff and students.
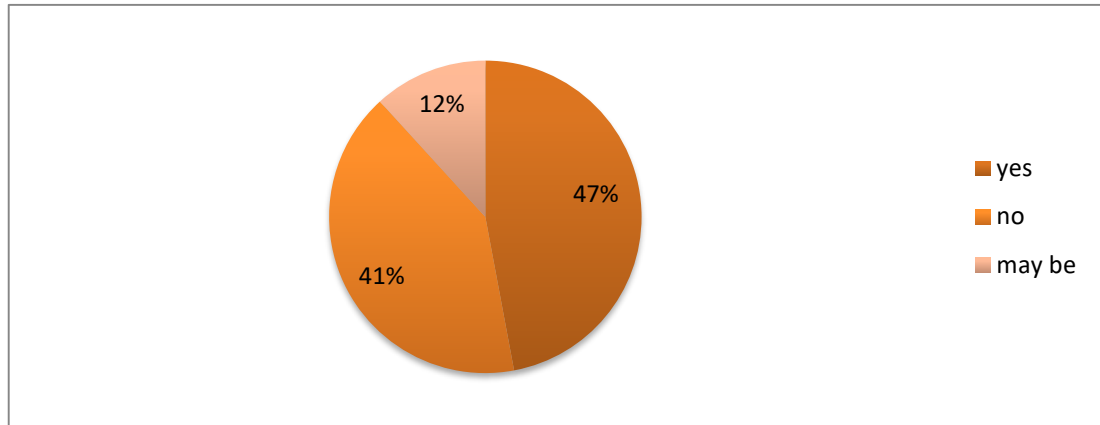
III.   Would you prefer voice commands for searching?

According to the survey, 76% people prefer using voice search. Voice search ,allows the user to use a voice command to search on the internet, a website, or an app. Voice search includes open-domain keyword query on any information on the Internet , for example in Google Voice Search, Cortana,Siri and Amazon Echo. It is interactive and a type of dialog system.

Compared to typing, voice commands are much easier and quicker for getting results from any of the search engines.

IV.   Would you be excited to play a game where the opponents in the game play with you in the physical world?

As seen there is not much difference in the opinions 'yes' and 'no'. Yet it is observed that, yes is the response of majority.

As AI migrates to the real world we do not seem to be satisfied with just a computer playing a chess game. Instead we wish a robot would sit opposite to us as an opponent, visualize the real board and make the right moves in this physical world. Such notions seem to push the definitions of AI to a greater extent.

V.   What developments you wish in future?

As this was a paragraph type question for the respondents to mention their thoughts. The responses were unique in their own ways .Few of the responses are mentioned below:

- Green India and developed India.
- Smooth running of games.
- A well-developed AI technology close to human with enhanced emotional values.
- Pollution free world
- Advanced artificial intelligence

The responses are very common need of each and every human that is, advancement of technology with consideration of the environment and the functionality.

3.   Conclusion

AI spans a very broad spectrum. AI can be used in almost every single field. Hence helping for development in all various fields. According to the research, We would like to conclude that humans are expecting AI or in general any other technology to be eco-friendly and at the same time help the development of not only a city, state or country but the world as a whole.

The human society is well conversed with the developments and is accepting it in all ways from daily life to work life.

One of the few hard and fast results to come out of the first three decades of AI research is that intelligence requires knowledge. Artificial intelligence is a vast and developing field of technology with no limits.

To conclude our observations, there are few factors which are responsible for the social acceptance of Artificial Intelligence. They are:

i. **Cost:** As the cost of the technology reduces, the purchase rate increases. Thus, a huge number of people can experience the functionality of the technology.
ii. **Availability:** If a technology is launched and being used in a particular country, the citizens of other country will hardly have the knowledge of that technology until and unless it is not made available to the citizens of that other country. As the availability of any technology increases the awareness of that among the society also increases.
iii. **Time factor:** We simply prefer voice recognition over typing, because it takes less time. Therefore, any technology that takes less time to complete its action is given the higher priority or preference.
iv. **Environment Friendly:** As the environment conditions are already known to all, it is must that any developments made in technology must not degrade the environment in any condition. As degradation of the environment can be proved harmful for the society.

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