AI and Films: Exploring audience reactions to on-screen robots and artificial intelligence in Movies

Sumera Gulzar
Sumeragulzar17849@gmail.com
Lecturer, Fatima Jinnah Women University

Ms. Abida Khatoon
MS Scholar, Riphah International University
abida

Ms Sadia Baqar
PhD Scholar, University of Karachi

Abstract:

The technology-based themes have received significant attention with the advancement of technology, especially artificial intelligence and robots. The aim of paper is to explore audience reactions on the Film depiction of the emerging concepts in Artificial Intelligence. Film depiction is getting carried away in pushing the limits of what AI can achieve in terms of bringing robots at par with human thinking capabilities. In order to explore audience reactions in light of audience perception and constructivism theories, a theme based qualitative study was conducted in which four gender-balanced Focus Group Discussions were held online with young adults (aged 19 to 29 years) from diverse backgrounds. The participants were earlier suggested a list of films themed on thinking robots and consequences of a scenario where AI enables robots to build thinking capability. Each recorded FGD lasted around hour and the moderator used a guided questionnaire to trigger responses. A number of recurring themes emerged from the discussion which led the researchers to suggest that audience believes that films are depicting thinking robot scenarios to build familiarity with the concepts while attempting to gain acceptance and ignite curiosity so that more people start talking about them. A significant number of people believed that Film is presenting an ideal scenario which fascinates humans. The discussions concluded that although films are suggesting new possibilities of Human-Robot Interaction or confrontations, the mere purpose of this depiction is to tell an appealing story. Audience sees no potential and hence no threat in the ideas suggesting that robots can overpower humans and majority considers them as selfless and powerful machine and that every robot has a human behind so the idea of robots coming face to face with humans was rejected.

Keywords: Artificial Intelligence, Robots, science-fiction, human-robot interaction, film depiction, audience reaction.

Introduction

Since the first industrial revolution when humans made machine, they have been asking it to do more and more and it has been doing it. From speed and accuracy to selflessness and cost effectiveness, machine has proven to be Aladin's Gennie, doing near about anything the master asks it to. With the advent of the fourth industrial revolution, passing through the ages and reforming, it seems like humans are at the verge of overdoing themselves in their ever-increasing expectations from machine. Concepts like Internet of Things and Artificial Intelligence, have made humanoid robots possible. These are thinking machines which can feed on data given to them and analyze it to generate thinking patterns of their own. This gives them the power to make decisions, or in other words, we have created thinking robots.

Robots and AI have also been the lead subject capturing the screen for majority of sci-fi plots. Although machine and robot-based themes never left the screen after World War II, robot are more often appearing now as the lead protagonist or lead antagonist characters with writers pushing the boundaries of what humans can expect from human-robot interactions. Literature is coming forward to suggest that the screen depiction of thinking robots is serving as an inspirational source for HRI designers. Like with most other development in human history, here too, media has been inspiring change and helping to set audience expectations about a certain new innovation. The henceforth emergent paradigm is a close competition between sometimes "fiction inspiring facts" and at other times "facts inspiring fiction".

Films have been comparing robots with humans in a multitude of dimensions since the start of the 19th century. They may be shown as machines designed to help humans or as thinking robots who are capable of human-like thinking. Studies have been conducted on what has been shown in the past or what may be shown on the subject in times to come (Schofield, 2018). However, in order to fully understand the consequences of such depictions, audience effects of these depictions must be taken into account. How positively or negatively these media messages are being consumed by the viewers. This study is trying to explore this very question. What are the gratifications the audience is getting from watching these films?

Film is showing robots in all roles from comical in "Small Wonder" to serious Protagonist in "bicentennial man" or from a support of the protagonist in "Big hero 6" to being purely overpowering antagonist like in "The Terminator" or "The Matrix". Other than showing robots and AI machines as humanoid or as a background support another dimension of studying maybe the varied complications and consequences of integrating such machines into our society. Films have been indicating many potential behavioral disorders including obsession, paranoia, flawed reasoning, hallucinations or superiority complex which robots may exhibit after humans engage in prolonged experiences with these machines. (Fisher, 2001)

If films are serving as a guidance for HRI designers, which film floated ideas are being accepted and which are being rejected by the general public. The focus of this study is not the highly trained expert HRI designers or the movie critiques but rather the common public and an understanding of audience perspective on the film depiction is sought through Focus Group Discussions. Volunteering Young audience were recommended two films, Chappie (2015) and Ex Machina (2014) in order to channelize discussions to reach the answers to research questions. However super-human or super effective, remarkable sane or totally dumb a machine maybe, the biggest question that the human survival instinct will keep triggering in every layman brain is always going to be, "can we control it?" (Złotowski, 2017). This has been another recurring central theme in a major chunk of sci-fi based around thinking robots. Many writers have used the fear appeal to grab audience attention. The study will try to explore how audience has received these messages? Do they see a future with robots where both will be co-existing with robots as human succors or is this new industrial revolution pushing towards an all-out war against a species, we created but could not control?

The study is significant in evaluating the impact of media messages on audience in a specific cultural context. How the audience uses fiction to shape their narrative about the innovation going on around them. Storytelling is being used for diffusion of innovation of robotic technology and studying its impact will help researchers and innovators in shaping audience opinion.

Literature Review:

Seventy years ago, in 1950, while running the world renowned "Turing tests", Alan Turing asked the most important question of the twentieth century "Can Machines think?" (Turing, 2009). While asking this question Turing introduced a new dimension to the terms "machines" and "think", and by doing so, the led the foundation of AI, machine learning and the modern-day Robotics. The coming years saw revolutionary development in the field and much work has been done on the subject of producing an AI enabled machine that can make its own decisions based upon data and information fed into it (Brady, 1984).

Media is the mirror image of the society, reflecting upon the sociological and technical developments many of which are more suggestive than reflective (Burton, 2010). The debate of media effects has always revolved around message and masses, whether it's the masses driving the media messages or the other way around (Perse, 2016). This article is exploring the effect of robot related media content(message) on audiences(masses) perception and how media is shaping public opinion for this new revolution (Javaheri, 2019).

Media have been rather actively involved in the field of AI enabled robots and media and fiction play an important role in designing human-robot interactions (Kriz, Fictional robots as a data source in HRI research: Exploring the link between science fiction and interactional expectations, 2010). The lack of encounters with humanoid robot in real life makes it compulsory to account for the on-screen depiction of these in order to encompass all possible human responses, interpretations and perceptions. (Mubin, 2019). This media representation of Human Robot-Interaction has since long guided AI professionals and Computer scientists. (Telotte J. P., 1995)

For more than three decades media has been projecting robots as self-less and powerful machines designed to offer never-ending, guilt-free help with no ethical obligations. (Cain, 2019) As appealing as the idea may be, it is not the complete picture. If we look at stories like Cyborg, Terminator, Star Trek just to name a few, we come across a storyline that is reflecting upon the threat humans feel towards their survival. (Geraci, 2007)

With media depicting a wide spectrum of human robot interactions, the inquiry of what is going on I audience minds is also important (Obozintsev, 2018).

Theoretical Framework:

Audience reactions have been analyzed in the light of **Audience Perception theory** and **constructivism theory**. The meaning given to a media content and the effect it has on an audience is immensely erratic and cannot be fully comprehended without considering the audience and how they make meaning or perceive and receive it.

Skeggs and Wood (Skeggs, (2008) have first discussed the construction of message by modern audiences and how meaning is given to media and films both by the individual as well as the society. Following a similar trail of thought is Ruddock (2008) where he has studied media influence on young lives in UK (Ruddock, 2008). Similarly, earlier researcher Morley also argued that people make sense of meaning for media message through a process of coding and decoding (Morley, 1989). **Audience perception theory** is all about the joint meaning that a media message makes to its audience (Wayne, 2016).

In the **constructivism theory** Jessie Delia (Delia, 1977) states that the perception of a media message and the process of derivation of meaning from a message largely depends upon the cognitive abilities and mental complexities of the receiver. The theory becomes relevant in the regional context where the research is trying to establish how respondents of different stratas perceive meaning from the film in their regional context. However, Griffin argues that the theory is immensely relying on the assumption that persons make sense of the world through systems of personal constructs and that meaning constructs are no more than cognitive templates which we use to make order out of chaos. (Griffin, 2000) The theory finds relevant in this research as the researchers try to explore how a variety of audience perceives the idea of thinking robots in films.

Method:

The important of Focus Group Discussions for reaching into the deep perceptions of human mind and behavior towards things has been established by its use studies of media effects and advertising (O. Nyumba, 2018). FGD are explicitly helpful in understanding the people perceptions as it brings us closer to understanding the collective mindset of people that yields a collective decision (Mukherjee, 2018). FGDs have been used as a qualitative data collection approach in order to bridge scientific research findings and layman's understanding and knowledge (Cornwall, 1995).

Despite their increasing popularity as a tool for qualitative data collection, conducting Focus Group Discussion presents a challenge of its own and retrieving good quality data from participants may only be possible if the moderator is using smart approaches to inviting participant input, instead of direct questions. This results in more reflective participants who can "help focus the Group's attention on the core study topic and also make subsequent comparative analysis straighter forward" (Colucci, 2007). This approach makes Focus Groups more interactive specially when dealing with young participants about difficult or sensitive topics like perceptions. An insight into the mind of young film viewers whose primary source of information on AI and machine learning is the media depiction of these. The researchers wanted to reach the bottom of what young film viewers take home from such movies. For that purpose, two films, Ex Machina (2014) and Chappie (2015) were recommended to interested volunteers who were required to watch at least these two movies before participating in the discussion as the plot of both movies essentially responds to the questions driving this study. In Ex machina, Caleb Smith is a programmer at a huge Internet company who has been chosen to be the human component in a Turing test to determine the capabilities and consciousness of Ava, a beautiful thinking robot. However, it soon becomes evident that Ava is far more self-aware and deceptive than either man imagined. Similarly, Chappie is centered around a thinking robot, designed for the police department gets stolen and is given new programming, he acquires the ability to think, feel and decide for himself. While the robot puzzles out human behavior, the authorities begin to see him as a danger to mankind and order; they will stop at nothing to ensure that Chappie is the last of his kind.

The two films were selected because of their exclusive relevance to the area of study. Both are focused on the idea of an AI Machine, which is thinking-enabled and is acquiring human-like thinking attributes independently and that is presenting the conflict in the stories. Both films are pointing out to the possibilities and consequences of such a situation.

As with most Focus Group Discussions, purposive sampling was used to select 32 individuals between the age of 19 and 29 years old, as individuals in the age of early adolescence are more prone to technology-based themes (Bakar, 2014). The volunteers who viewed both movies were invited to participate in an online Focus Group Discussion. Four forty minutes to an hour-long session were conducted using the Zoom online conference tool. Each session had almost eight participants and was recorded in order to get back to it for deeper analyses of the discussion being held (Millward, 1995).

NAME	AGE	GENDER	CITY
1ST SESSION			
RASHID AMAR	29	MALE	ISLAMABAD
RUMISH	22	MALE	ISLAMABAD
SARAH GHAZI	21	FEMALE	RAWALPINDI
AQDAS HASHMI	25	MALE	ISLAMABAD
ASAD UR REHMAN	26	MALE	KARACHI
ROHA	22	FEMALE	RAWALPINDI
RAMEEN ALI	20	FEMALE	RAWALPINDI
KASHMALA KHAN	23	FEMALE	ISLAMABAD
2NDSESSION			
MOMINA MIR	20	FEMALE	PESHAWAR
SUNDUS TARIQ	20	FEMALE	RAWALPINDI
M.EBAD	27	MALE	ISLAMABAD
RABIA WAQAR	21	FEMALE	RAWALPINDI
USHNAH IMRAN	21	FEMALE	KARACHI
YUNUS ALI	21	MALE	RAWALPINDI
ROHAN ZAKI	29	MALE	RAWALPINDI
MUHAMMAD SHIES	25	MALE	RAWALPINDI
3RDSESSION			
ZAHRABATOOL	21	FEMALE	GUJRAT
HUMNA SAJID	21	FEMALE	ISLAMABAD
KAMRAN ALI	29	MALE	PESHAWAR
ANSHRAH BINT E ASGHAR	20	FEMALE	RAWALPINDI
NOUMAN GUL	26	MALE	PESHAWAR
ERRUM AHMAD	23	FEMALE	ISLAMABAD
IZZA MIRZA	24	FEMALE	ISLAMABAD
MOHAMMED ABDULLAH	23	MALE	KARACHI
4TH SESSION			
HASEEB	23	MALE	RAWALPINDI
TALAL ATIQUE	21	MALE	KARACHI
AREEJ KOMAL	25	FEMALE	ISLAMABAD
AROOJ FATIMA	19	FEMALE	ISLAMABAD
EHTEHSHAM ADEEL	22	MALE	RAWALPINDI
KIRAN HASHMI	26	FEMALE	RAWALPINDI
FAWAD BASHIR	24	FEMALE	RAWALPINDI
SHIES NIAZI	25	MALE	ISLAMABAD

Respondents Demographic details

The sessions were kept gender-balanced so that gender-bias will not affect the findings and the results are representative of youth in general and gender is not a consideration. The participants belonged from diverse educational and professional backgrounds which added depth to the discussion. The FGDs were moderated using a small guided questionnaire which was designed to probe discussion on and around the research questions. A multitude of subjects or themes projecting out of the discussion were touched upon to gather as much data on the perceptions of young audience, as possible. Krueger (1994) framework was followed to analyze the data.

Discussion:

The Focus Group Discussion sessions reflected upon a much-needed overview of audience psyche and how well they ingest the media feed on this relatively new and under explored subject. Artificial Intelligence has been around for about a century now and has been the subject of films for nearly as long. The study was aiming to ask audience members what they think is true or possible and why they believe films are showing what they are showing. The FGDs became an interesting reflection of how media affects the perceptions of members of society and how audience brains have evolved as a result of continued exposure to the subject.

Data gathered from the FGD sessions was analyzed using Krueger (1994) Framework in order to yield a coherent interpretation which presents a complete picture (RA, 1994) of young Audience perception towards the film depiction of thinking Robots. Some themes emerged when overlapping ideas were grouped and interpretation was done based on ideas that were correlating or had interdependency.

Perfect Version of Humans:

The participants reflection on the near perfect depiction of Humanoid robots was invited. They say that “to err is Human”, are films getting carried away in presenting robots as “the perfect version of Humans”. The question raised interesting discussion on the film’s depiction of humanoid robots, where most of the participants agreed that films are getting too far from reality in showing prospers of humanoid thinking robots, majority also endorsed those films are doing that to gain acceptance from the viewers. As robots and AI are lesser commonly known concepts and audience members felt that film is playing its role

in educate Audiences about what to expect from human-robot interactions, although majority agreed that it is just media hype and most of what films are showing is not achievable in reality. Participants believed that the purpose of showing a near perfect robot is to generate favorable public opinion for robotics technology (Bertolini, 2016). They are viewing films as opinion leaders of the society who is looking towards media for diffusion of this robotic innovation into their lives (Michaud, 2017).

The robotic strive for perfection was seen as a human trait and the participants agreed that the perfection that reflects in the robotic technology is essentially the perfectionist approach of the human programmer behind it. Participants stressed upon the fact that although Humans err, its again the human that sorts out the error. Talking of robots, participant opinion seemed to converge on the point that it's the human who programs this err-free robot and makes it perfect, and when errors do show up, its again the human who sorts out the errors. Most of the participant flatly refused the point of comparison between humans and robots, proposing that human is far superior and supporting their argument with the endings presented in all of these films which were mostly inclined towards restoration of peace by a human protagonist sorting out the errors in these Artificially Intelligent machines mostly presented as the antagonist.

Robots as a cathartic object:

The second trigger for the FGD was the question "Why are films focusing on Robots as a cathartic (emotional cleansing) object?" Again, a lot of discussion was generated, participant feedback centered around the reason why film makers are deciding upon this role for the robots. Why is it that instead of doing the dishes and the laundry, or photocopying at a busy office, films are showing robots befriending humans, counselling them and getting emotionally involved with their makers or the coworkers of their makers. The participants stressed upon the point that even though it is not possible for the robots to fully comprehend the complexity of human emotion, Film makers are constantly presenting the idea that they can understand humans and can comfort them by listening and responding with the right answers.

Pointing out the Void in the Society:

The discussion pointed out that film makers are merely trying to give audience what they want to see. They are showing robots that can provide emotional support because that's what humans need. The mere fact that audiences are accepting these themes as story ideas tells us that humans are missing this element in their lives. The idea fascinates them like flying carpet or magic lamp used to do, and now that we have technological advancements to match those fancy ideas, storytellers are after new appeals for their stories. Someone who can listen to you and talk to you and talk back selflessly is now becoming a fascinating idea and film is simply trying gratify the audience by showing what they want to see. The studies on application of entertainment gratification that are sought by the movie audiences may make a logical reference here (Oliver, 2010), which states that the movie audience choose what they want to see. Many participants at the discussion sessions believed that it's the audience who the media is trying to gratify by showing robot as a tool for cathartic, because humans are missing it in their lives and media is using them as a temptation which will make audiences like the film; "merely for the sake of an interesting storyline" as one of the participants said.

Participants' evaluation of the idea of robots as cathartic object:

In almost all four sessions, the discussion on the prospects of being able to engage in emotional cleansing and counselling with a non-human became rather fascinating for the participants. They expressed that it is tempting to be able to engage in guilt-free emotional unloading while at the same time not being insecure or losing your self-respect out of a fear of judgement by other humans. Many of the participants said that films are being made on these themes because of the increased social anxieties and prevailing complexities of human relations and resulting challenges to mental health of humans. Having said all of this, every session did conclude with majority agreeing that no matter how captivating the thought may be, robots can never replace humans when it comes to emotional connection as no amount of AI or programming can produce a machine that is capable of empathy and understanding of contextual and implied meanings of what is being said (Wolbring, 2014). Human-robot Interactions can never replace human to human interactions as only a human can know exactly what to say in which situation.

Is the Creator (Human) threatened by its Creation (Robots)?

After enough discussion on the prospects and possibilities of thinking robots and why films are presenting them as an all-encompassing solution for mankind, the direction of the discussion was steered towards the next more important part of the discussion, audience was asked, if they thought films are pointing out the threat of having a thinking machine around us which we may not be able to control? by reflecting upon the possible consequences of developing such a superior machine.

Participants believed mostly that film makers are just writing stories and letting their imagination drift away. Writers are making plot by using research based what-if scenarios, trying to help the maker and the consumers of these thinking machines build familiarity with the new normal being defined by this technology (Robotics, 2021). Where these ideas help audience prepare for such an environment, few of the participants did show concerns about the quick advancements in machine learning and AI. They believe that with AI achieving remarkable milestones like Tesla and the Google dog, storyteller may actually have a point when they try to tell us that like fire, "robots can be a good servant but a bad master".

Where AI engineers are trying to mimic human intelligence, achieving new milestones on social robots every day, most participants still insisted that no matter how realistic films may make it sound, "Creation" can never reach the level of a "Creator" so they perceived no threat of robots taking over and said that is impossible logically as well as biologically.

Robots, Humans and Survival Instinct:

Towards the end of the discussion, participants were asked another arduous question that tried to dive deeper into audience perception to explore how comfortable they were with the AI revolution. Participants were asked If AI enables survival instinct in robots, will it present a new challenge of "survival of the fittest" for humans? In line with the on-going discussion, majority of the participants believed that it's not human vs robot in fact, it is human vs 'human who programmed the robot'. Participants very well understood that robots are designed for co-existing with humans to facilitate in their daily life processes and cannot come in the way or stand-up against us as an opponent. Participants further discussed that humans see robots as a threat because

we see our own reflection in them, it's not the robots, rather the human behind and around the robot who is seeing it as a threat or using it to overcome other humans (Innes, 2020). Robots themselves cannot be seen as a threat as they are carefully manufactured and the most intelligent creation on Earth will never overlook the threat to their own safety, so, in this regard, films depictions maybe seen as an early warning sign for the programmers and engineers but they are not being perceived as alarming threat to survival by the general audience.

Conclusion:

Films and film audience reflect upon and direct the practices of one another in order to play the role of a regulator. Audience reaction on any media content helps us evaluate the penetration of the message in the society. The study explores audience reactions on film depiction of AI enabled thinking robots in an attempt to gain insight into the young audience raptness with technology related themes. The take-home messages that an average youth is perceiving from the on-screen Robots were studied, how is young audience perceiving the parallels drawn between humans and social robots? Are they able to replace human to human interaction? Why is film presenting humanoid robot as a possible threat for human survival? Discussion revealed that youth believes that other than entertainment, the films are a major source of information on these innovative technologies and the film depiction largely serves to educate and familiarize audiences this technology and helps built audience expectations. Audiences were using the films to update their knowledge about the upcoming technologies and exploring the possibilities. Young audience members believed that robots can never be a replacement of human-to-human interactions when it comes to emotional cleansing and "talking it out" but the very depiction of robot doing so in Films reflects upon the absence of enough human-to-human interactions in Society. Respondents felt that although robots can never replace human to human interaction, there is need for more interaction between humans which is being depicted in film. Audience believed that film is trying to gratify the human need for catharsis by presenting robots a cathartic tool with "no strings attached". Even though the film depiction of these robots seems to be full of "what-can-bes" and "what-ifs", audience perceived entertainment to be the biggest gratification expressing that on-screen robot is the "Prince Charming" of the fourth industrial revolution. Henceforth, the ideas of robots taking over or

replacing humans were totally rejected who do not take these film depictions as more than scientific fairy tales.

Although the study presents interesting insight into audience mindset and how they perceive the messages given in films, including more films on the same theme can further strengthen the findings. Furthermore, coming researchers can validate or rationalize these audience reactions by discussing them in light of the huge body of audience effect theories. Incorporating expert interviews can also add a new dimension to this research in the future.

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