

REVIEW PAPER

Exploring the Evolution and Impact of Artificial Intelligence in Science Fiction Cinema: An Overview with Financial and Economic Context

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Received: 16-12-2023

Revised: 25-02-2024

Accepted: 07-03-2024

ABSTRACT

The research Paper examines the complicated interplay of AI and science fiction films, which charts its evolution in terms of depiction while examining how it impacts society's perceptions. Traversing historical epochs, from early portrayals in classics like "Metropolis" to contemporary narratives in films like "Her" and "Ex Machina," the study employs a qualitative analysis of key cinematic works. In methodological terms, this research is based on a sequential framework that examines the evolving themes, ethical issues, and transformation of artificial intelligence characters. To understand recurring themes and their implications, a qualitative content analysis has also been applied. The paper reveals the symbiotic relationship between movie stories and society's perceptions, shedding light on how science fiction cinema has a role to play in shaping national opinion about artificial intelligence, influencing ethical concerns, technological progress, and social attitudes. This paper seeks to provide insight into the cultural, technological and commercial aspects of this widespread theme through an examination of the intersection between artificial intelligence and science fiction in films.

HIGHLIGHTS

- ① The genre of science-fiction cinema has developed from its early focuses on space travel and futuristic technologies to more nuanced explorations of AI, robotics, and their social implications.
- ① Films that focus on AI impact how people perceive artificial intelligence, leading to discussions about the ethical and technological aspects of AI and its interactions with humans.
- ① The integration of advanced visual effects and storytelling techniques in AI films reflects and shapes societal attitudes towards emerging technologies.
- ① This study comprehensively analyzes box office data, production budgets, and critical reception to explore AI-themed films' economic and cultural impact.

Keywords: Science Fiction Cinema, Artificial Intelligence, Narrative Innovation

The intersection of AI and science fiction cinema was an intriguing topic that transcends entertainment, touching on the core of humanity's curiosity and technological exploration. This background section aims to give a contextual basis for the notion that artificial intelligence and science fiction films are connected, bearing in mind their historic development and cultural significance.

This research aims to analyze the evolution of artificial intelligence representations in science

fiction films, find future themes, and assess their impact on societal perception, technology discussions, and ethical considerations.

AI and robots are frequently portrayed in movies like James Cameron's *The Terminator* and Fritz Lang's *Metropolis* as cunning, violent creatures.

How to cite this article: Prajapat, S. and Singh, A.K. (2024). Exploring the Evolution and Impact of Artificial Intelligence in Science Fiction Cinema: An Overview with Financial and Economic Context. *Econ. Aff.*, 69(02): 1097-1107.

Source of Support: None; **Conflict of Interest:** None



Nonetheless, cinematic representations present a more complex picture and evolving anticipations regarding human-robot and human-AI relations as the divide between amazing technology disappears to create a new social reality in which humans, AI, and robots communicate (Dieter & Gessler, 2021).

Early Cinematic Ventures into AI

From the beginning of the 20th century, when classic films such as *Metropolis* in 1927 introduced audiences to the concept of sentient machines, the roots of AI representation in cinema can be traced. The films created an environment in which narrative exploration of the dynamic between humans and machines was taking place, usually with AI as a symbol of industry's progress or warning signs of unforeseeable consequences. The film depiction of AI has evolved as technological advances have accelerated during the 20th century. There was a shift from simple mechanical organisms to more complex, independent artificial intelligence in the 1950s and 1960s. The evolution reflected the social concerns and expectations regarding technical progress, which were echoed in this era by fascinations with space exploration, computerization as well as opportunities for smart machines.

Science Fiction as a Reflection of Societal Values

A compelling mirror of the values, fears, and ethical dilemmas of today's society can be seen in science fiction cinema with its imaginative narratives and futuristic settings. In this genre, the portrayal of AI in society is closely tied to how we talk. The films of filmmakers are becoming the canvas where society's views can be reflected and debated, as they struggle to deal with the consequences of growing technological progress. Science fiction frequently raises questions that are parallel to the actual world as it examines relationships between humans and machines. Key themes emerge which are shaped by autonomy, control, and the consequences of playing God with technology. In times of rapid technological changes, the portrayal of AI in these films will be a tool for society to reconcile its aspirations, fears, and moral boundaries.

It is reasonable to suggest that a fictional environment and society, which can always be traced back to one single technology or time in the real world,

are explored by Science Fiction. "Mary Shelly's *Frankenstein*" (1994) is often considered to be the seminal work that created the genre (Edwards, 2019), as it provided a fictitious environment that could only occur through the application of 'science' and technology.

Science fiction offers a narrative space for societies to explore the potential trajectory of their technological progress, whether it is a utopian vision of harmonious coexistence or dystopian nightmares about AI rebellion. As a result, the evolving representations of artificial intelligence in science fiction films are not only entertaining but also critically confronting the ethical and moral issues inherent in the pursuit of artificial intelligence, providing the audience with a perspective that allows them to assess and critique their values and choices.

Contemporary Context

Today, the intersection between artificial intelligence and science fiction cinema has been intensified as fast developments take place in real-world AI technologies. To deal with the profound effects of artificial intelligence on society and ethics as well as human nature, science fiction films have become increasingly complex in this 21st century. Robots tend to be very human in movies. Although these robots are not yet a reality, they are already being used in healthcare, education, and business. The benefits of robots are to relieve loneliness and enable communication. To build robots that look and act like people, engineers need to have a full understanding not only of technology but also of human thinking, emotion, or behavior (Broadbent, 2017).

The depiction of AI in films has evolved from fantasy futurism to a more detailed investigation into the current and near-future implications of advanced artificial intelligence technologies. Movies such as "Her" (2013), "Ex Machina" (2014), and "Blade Runner 2049" (2017) not only showcase cutting-edge special effects but also delve into complex narratives that question the nature of consciousness, morality, and the boundaries between humans and machines. People are hooked on technology right now. This phenomenon can be found in some literary works, one of them is the movie "Her" by Spike Jonez. The story of the movie "Her" shows how high technology can be applied. For example, when

a main character named Theodore's job is very different. Handwritten, beautiful letter writer wants to write a letter, he's just dictating. The words are transferred to a small microphone that is attached to your computer. Once the words have been dictated, they are automatically transcribed into a handwritten letter on blue stationery (Minarti, 2013).

Furthermore, modern science fiction cinema provides a lens for reflection and guidance as the real world's artificial intelligence systems become integral to our daily lives. It's a reflection of ethical issues and societal challenges presented by AI, which encourages audiences to look at the consequences of unchecked technological progress. In that context, science fiction is becoming a key tool in enabling us to become more complex about the role AI plays in our lives, influence public opinion, and shape future concepts of what we will be. In providing an ongoing discussion of the responsible development and inclusion of artificial intelligence in society, these stories built up by such films are cultural dialogues.

Financial and Economic Constraints of Sci-Fi Movies

The budget and the success of science fiction movies are correlated. Only one sci fi film in the last twenty-five years had been made at a budget below \$45 million, but it was worth over \$100 million and that is District Nine. When it comes to sci-fi, you have to spend money to make money. According to the correlation, no green represents any glory (Knapp, 2011). The financial and economic constraints of science fiction cinema relate to the difficulties and limitations faced by filmmakers and studios when they produce, market or profit from films within the sci fi genre. The various aspects of the film-making process, industry dynamics, and the preferences of the audience contribute to these constraints.

High Production Costs and Technological Investments

AI-themed science fiction movies often involve intricate special effects, advanced CGI, and cutting-edge technology to create realistic and visually stunning portrayals of artificial intelligence. Significant production costs may arise from the demand for high quality visual content and Immersive Story Telling. Cutting edge technology,

skilled animators and advanced equipment are contributing to budgetary constraints which make it difficult for filmmakers to balance the creative vision with financial viability. As a result, studios can face budgetary constraints in order to make movies about Artificial Intelligence themes on the big screen and have an impact on the overall scale and quality of production.

Market Uncertainty and Audience Reception

The success of sci-fi films based on artificial intelligence depends a great deal in audience engagement and market response. While these films are likely to attract a Tec savvy audience and enthusiasts, there is the risk that they may be dissuasive for other audiences who don't care about AI technical intricacies. In particular, when large scale productions with high budget depend on widespread audience acceptance to cover costs, the potential for niche appeal may present financial challenges. In order to ensure financial success, manufacturers must carefully manage the balance between catering to tech lovers and creating a narrative that is accessible to an even wider demographic.

Market Saturation and Genre Fatigue

Market saturation due to the popularity of sci-fi movies based on artificial intelligence led to audience fatigue. There is a risk of diminishing returns, both in terms of box office revenue and critical praise, as more films explore the same themes. Financial constraints arise when filmmakers need to find innovative ways to differentiate their AI-themed movies from the multitude of existing titles. This can involve investing in unique stories, exceptional images or famous actors contributing to the increased costs of production. For studios aiming to achieve both financial success and critical acclaim in a crowded genre, managing market saturation becomes an essential economic challenge.

Artificial Intelligence (AI): Unleashing the Power of Intelligent Machines

A rapidly developing area of computer science called artificial intelligence gives machines the capacity to mimic human intelligence, enabling them to carry out tasks that were previously completed by people. The main aim of AI is to

develop algorithms and systems that are capable of learning, rationalizing, or adapting over time to enhance their capabilities. A wide range of technologies, ranging from straightforward rule-based systems to more sophisticated machine learning models, are used in this area.

The ability to learn from data is one of the defining characteristics of artificial intelligence. Machine learning is a subset of artificial intelligence that allows systems to identify patterns, predict them, and increase their performance based on experiences. AI is different from conventional computer programs, which work based on predetermined instructions, because of this adaptability and development ability.

The ability to reason, which allows AI systems to make informed decisions, resolve problems, and deal with complicated scenarios, is another key feature. Natural Language Processing (NLP) is yet another aspect of AI, facilitating machines to understand and respond to human language, enabling seamless communication.

The computer is limited to doing tasks that are assigned to it. If we are unsure of the precise solution to a problem, we can still program a machine. Look through a sizable collection of attempted solutions. By limiting the machine's use of Pattern Recognition techniques to the kinds of attempts for which they are appropriate, efficiency can be greatly increased (Minsky, 1961).

The use of artificial intelligence in sci-fi films has been a powerful tool to comment on societal issues. The societal impact of artificial intelligence on relationships, privacy, and governance is explored in films such as "Her" and "Minority Report." These stories allow filmmakers to reflect on the current state of affairs, and imagine possible futures influenced by AI's integration into our daily lives. In conclusion, the role of artificial intelligence in science fiction films is multifaceted, ranging from a catalyst for exploration to a reflection on human nature, potential threats, ethical dilemmas, and social commentary tools. Through these roles, sci-fi films engage audiences in discussions about the implications of the development of artificial intelligence, contributing to a broader cultural dialogue on the relationship between humanity and technology.

REVIEW OF LITERATURE

There's two ways to look at science fiction with artificial intelligence generally called science fiction AI: First, it can be considered to be an important part of a larger number of AI stories. In general, a narrative is an artefact of different kinds that are used to tell stories and convey some particular values (Bal, 2009). Consequently, the narrative of artificial intelligence is considered to be a significant representation of real AI's potential and its possible consequences, like foresight or technology assessments.

A binary opposition between nature, faith, and humanity on the one hand, and technology and science (as manifested in the machine) on the other has dominated the history of science fiction films. However, the stories and the human-machine dynamic in science fiction films changed as the cultural impact of post-modernity became more noticeable. There is a sense of unease about modernist progress, expressed through rationality, and a belief in absolute and universal truths in many science fiction films, particularly dystopian ones (Favaro, 2019).

Science fiction became a distinct genre in the modern era, with its social upheavals and faith in technological advancement. Essentially, science fiction narrates tales about and via made-up technology, but within the framework of the most recent scientific theories. Consequently, a fictional and scientifically explicable novelty, or "novum," has served as SF's starting point (Suvin, 1979), which will bring about the creation of a new world distinct from our current one. The scientific basis, however, only states that the novum is cognitively feasible in the story world and does not require it to exist in the real world (Roberts, 2006: 31, 32).

Like any genre, science fiction is used to tell dramatic stories that readers can identify with in a variety of media, such as books, comic books, video games, and films. In order to perform the function of narrator, Science Fictional Artificial Intelligence frequently possesses attributes that surpass the actual technological capabilities of a technical artifact controlled by algorithms. Two basic narratives in movies are easily distinguished: AI at the level of computer systems that yearn for control over humans, and AI with a body that tries

or simulations to be more manly (Irsigler and Orth, 2018).

Definitions of artificial intelligence in science fiction and the AI found in today's technological industry are not clear in terms of how these systems relate to each other technically or in terms of how regular users understand and interact with them (Finn, 2018).

One of the most important ethical concerns facing the artificial intelligence research community is how AI products and research can be conceptualized and presented to the public in a way that is both safe and effective. The unpredictable nature of AI is a topic of much fear and concern in public discourse. It is influencing people's perceptions of artificial intelligence in a way that may ultimately impede further research into the field (Johnson and Verdicchio, 2017).

Many critics and scholars concur that the first part of *Ex Machina*'s narrative centers on the objectification and repression of women (rather than robots). However, there are considerable differences in interpretations concerning the development of the story. Negatively, Ava represents the value of women in movies as a whole, "When the only female lead in your movie is a character who has the responsibility of turning on the male lead when he has the ability to turn it off" (Watercutter, 2015). Thus, despite the fact that Ava is the most intelligent character in the movie, the takeaway is that smart women can best achieve their goals by playing cunning "femme fatales" (*ibid.*). It is argued that rather than criticizing gender discrimination in society, the film industry, or the film industry, this movie only serves to reinforce it.

Resuming *Ex Machina*: Nathan uses his prominent company Bluebook and all available data from social interactions via its predecessor to Facebook or Google to build Ava's humanlike AI, which makes a lot of sense from a real-world standpoint. The fundamental plot device—that an AI trained on copious amounts of data about human social interaction could eventually manipulate people—can, in fact, raise pertinent concerns (Harari, 2017: 382–397).

Sci-Fi's quest for wonder has always been characterized by its visual effects (Pierson, 2002). In this sense, "cinematic science," or the technical feat

required to make the fictional images in the films appear real, is more important to science fiction artificial intelligence than is the realistic portrayal of science and technology in movies (Telotte, 1995).

Film is a medium that enables us to think in advance, anticipate the future of technology, and develop it. According to film theorist Thierry Kuntzel, the medium of film lends itself to people's imaginations as it can be analogous to dreams, something it rephrases and amplifies. Consequently, several psychological functions in society can be served by science fiction movies. They are capable of promoting catharsis in the audience, offering viewers an escape from the tedium of everyday life, as well as providing a relatively safe forum for the expression of cultural anxieties (Pisters, 2019).

In works of science fiction, AI comes up with a lot of complicated theories, and societal and moral issues that have been historically explored. To illustrate how imaginative creativity and technical innovation have fueled each other, it is possible to use the interaction between science fiction from the 1950s through today in terms of artificial intelligence development (Bates, 2011).

Incorporating artificial intelligence (AI) technology with the film and television industries has led to dramatic changes in television production and programming as well as the creation of a new wave of AI-powered media. Because AI technologies are more accessible, the quality of film and television production is improved (Reddy V.S., Kathiravan, M. & Reddy, V.L. 2023).

A number of trade press articles started to surface, explaining how Hollywood studios are progressively incorporating artificial intelligence (AI) tools developed by emerging technology startups to analyze financial, script, and audience data and ultimately impact movie commissioning in the 2018–2019 frame. The pieces included several stories about how movies were taking increasingly advanced use of AI tools (Chow, P.S. 2020).

Hyperrealism is one of the more interesting factors in this field. Artificial intelligence is interacting with mathematics. It does not have human eyes, ears, or emotions. It's about numbers and patterns. The most interesting aspects of artificial intelligence are the products of these operations. In the film *Interstellar*, the audience was shown how advanced

computational algorithms worked in conjunction with visual effects to create a stunning image of a black hole. In 2014, *Interstellar*'s black hole was first shown to the audience. Until April 2019, we had no idea what they looked like. The computer image is very similar to the real picture (Osmon, 2023).

Two subliminal themes of AI films are technology and emotion, which have to do with how AI is positioned within a larger narrative that explores the question of what it is that makes humans human. The early development of AI technology was characterized by the so-called intelligence's potent computing and memory storage capabilities. However, because machine learning and deep learning technologies have advanced, artificial intelligence is now utilized in human creative endeavors. The growing maturity of AI poetry composition, AI screenplays, AI paintings, and other applications is causing human confusion about "who I am" to resurface. Beyond the sum of one's body, mind, and emotions, what makes a human being also includes self-awareness and reflection, according to the designers of artificial intelligence movies like *Zoe*, *Bicentennial Man*, and *Ex Machina*. Regardless of form, the AI has a completely distinct identity when it possesses consciousness (Zhu & Zhang, 2022).

METHODOLOGY

The methodology employed in this research paper is based on a systematic and exhaustive analysis of the most important scientific fiction films, which go back over many epochs. A structure is laid down in this study, which provides an overview of the past, analyses current trends, and assesses how artificial intelligence representations affect public perception. The films chosen for analysis are those that have been deemed critical to the depiction of artificial intelligence in science fiction movies. The selection shall be made based on critical acclaim, cultural impacts, and thematic relevance. This study takes a look at films in the early 20th century, with an emphasis on how AI representations are evolving. The films are subject to a thorough content analysis, focusing on the portrayal of artificial intelligence characters and their role in the narrative as well as ethical issues raised. Consideration shall be given to the development of character, visual presentation, and dialogue about AI.

Table 1: Evolution of AI Themes in Selected Science Fiction Movies

Movie Title	Release Year	Themes
Metropolis	1927	Technology as a symbol of human ingenuity
Forbidden Planet	1956	AI as a potential threat
2001: A Space Odyssey	1968	Complex AI characters, existential questions
Blade Runner	1982	Ethical dilemmas, AI's human-like qualities
Her	2013	AI protagonists, human-like emotions
Ex Machina	2014	AI protagonists, ethics, and consciousness
Ghost in the Shell	1995, 2017	Ethical considerations, human-machine fusion
Transcendence	2014	Ethical dilemmas, existential questions

Historical Overview

The origin of artificial intelligence (AI) portrayals in science fiction cinema can be traced to the early 20th century. The silent film "*Metropolis*" (1927), directed by Fritz Lang, exemplifies one of the earliest representations of a humanoid robot, presenting AI as a symbol of human innovation and industrial progress. Furthermore, Fred M. Wilcox's iconic 1956 film "*Forbidden Planet*," which portrayed a more compassionate aspect of artificial intelligence, debuted Robby the Robot. This time also laid the groundwork for future cinema research of artificial intelligence, which established that AI is both a tool for humanity's advancement as well as an emerging source of homicidal threats.

Golden Age of Science Fiction

The pivotal period for the development of artificial intelligence representations in movies was the 1960s and 1970s. Stanley Kubrick's "*2001: A Space Odyssey*" (1968) revolutionized the portrayal of AI with HAL 9000, an intelligent computer with its agenda, introducing complex ethical dilemmas. The emergence of films such as "*Blade Runner*" (1982) directed by Ridley Scott, which explored the blurred line between man and artificial intelligence, has also given rise to a range of issues related to identity and morality. The golden age of science fiction cinema

provided the foundation for more complex and clever AI stories, enabling future exploration.

Contemporary Trends

Rise of AI as Protagonists

In the latter part of the 20th century and the beginning of the 21st century, films such as “Her” (2013) and “Ex Machina” (2014) have shown a paradigm shift in the depiction of artificial intelligence as the main characters. These accounts have explored the emotional and mental dimensions of artificial intelligence, moving far from a traditional paradox between AI as a savior or threat. A growing interest in the potential of AI to possess humanlike characteristics, blurring the line between creation and creation, was reflected in the rise of AI protagonists.

Ethical Dilemmas and Existential Questions

Ethical considerations and existential issues concerning artificial intelligence have been explored more closely in recent science fiction films. Films such as “Ghost in the Shell” 1995, 2017, and “Transcendence” 2014 provide insight into the consequences of merging human consciousness with artificial beings, which examines the moral complexity of AI development. These stories highlight the changing nature of social concerns, as worries about AI as an external threat have given way to moral quandaries arising from incorporating AI into human life.

Impact on Public Perception

Science fiction movies play a crucial role in the artificial intelligence industry. AI Movies provide an insight into how people feel about technology and influence their attitudes to its development, as well as contribute to ongoing debates on ethical implications.

Shaping Technological Discourse

Its influence on how we talk about artificial intelligence and emerging technology is one of the most significant contributions to science fiction cinema. These films have the power to influence public opinion, fears, and expectations through compelling narratives and visual storytelling. For

instance, the optimistic depictions of artificial intelligence in movies like “Star Trek: The Motion Picture” (1979) and “Iron Man” (2008) have inspired awe and excitement about the possible advantages of artificial intelligence. Furthermore, graphic depictions in movies like “The Matrix” (1999) and “I, Robot” (2004) have increased skepticism and concern about the unrestricted development of AI.

In many ways, the portrayal of AI in movies reflects society’s concerns and aspirations. Researchers can get a good idea of what people think and care about through an analysis of how different movies present AI. The way science fiction films act as a mirror, reflecting and sometimes challenging society’s views on Artificial Intelligence has been explored to contribute to ongoing discussions about the ethical and societal implications of these technologies.

Influence on Scientific Innovation

Beyond shaping opinion, science fiction cinema has also taken on a role in promoting and affecting real scientific innovation. For instance, the idea of a touch screen in “Star Trek” has come to pass. In the context of AI, movies like “Minority Report” (2002) have influenced the development of gesture-based interfaces. To understand the interlinked relationship between fantasy and reality, we must know how these movies have led to actual progress in technology throughout the world. Science fiction is also influencing innovation, not just in the field of technology. Ethical issues and the impact of artificial intelligence technology on society are also covered. For example, discussions about the ethical treatment of AI entities and the potential societal implications of creating machines with emotions have arisen as a result of the depiction of AI entities with humanlike emotions in films such as “A.I. Artificial Intelligence” (2001). The real role played by science fiction films in the evolution of artificial intelligence, as well as ethics arising from such film representations, are examined in this section.

Lastly, science fiction cinema has a very profound and comprehensive impact on the perception of AI. These films are contributing to the current social dialogue on the ethical implications of Artificial Intelligence, which is also influencing our culture’s understanding of AI and inspiring innovation. The understanding of the dynamic interplay between film representations and public perception is

essential for promoting informed debate and responsible development, as AI continues to advance.

Challenges and Criticisms

While attractive and exciting, science fiction cinema has also faced challenges and criticisms when it comes to the portrayal of AI. To understand how public perception and debate could be affected, it is necessary to examine these challenges. Here, we'll take a look at two main aspects of challenges and criticisms.

Stereotyping and Bias

Stereotyping: The Perpetuation of stereotypes is one of the most pressing issues that arises from representations of AI in science fiction films. In many films, it is common to see AI entities in tiny and often clichéd roles such as the malevolent machine bent on mankind's destruction or the benevolent robot companion. This oversimplification would reinforce current social biases that are already present, and it also hinders a more comprehensive understanding of possible AI roles and impacts in practice.

Bias: In addition, AI representation in films is an accidental reflection of society's biases. In the film, filmmakers may unconsciously or consciously make gender, racial, and cultural biases into their AI characters, which results in a reinforcement of stereotypes. This may have a material impact on how citizens perceive and react to artificial intelligence, affecting how these technologies are developed and adopted in the real world.

Fear and Misconceptions

Fear as a Narrative Device: When it comes to the depiction of AI in sci-fi cinema, fear is used as a key narrative device. Films such as "The Terminator" and "The Matrix" amplify the fear of a dystopian future in which AI clashes with humanity. Although fear can be an effective tool for telling a story, it is also capable of contributing to the spread of misconceptions about AI's abilities and intentions in everyday life. In turn, this may lead to delays in the development and deployment of AI technologies.

Misrepresentation of AI Capabilities: Sometimes movies exaggerate AI's capabilities to make it

appear like an omniscient being with almost supernatural powers. This misrepresentation could mislead the audience into thinking that AI technologies are still in a state of decay and foster unrealistic expectations. To cope with this challenge, it is essential to ensure that information on artificial intelligence is properly provided to allow for a more informed and positive dialogue about the ethical and social implications of AI.

The Impact on Public Perception: Public perception can be significantly influenced by fear and myths that are the subject of science fiction films. Even as AI technologies are capable of bringing significant progress, the widespread belief that it is inevitable for evil AI to threaten us could create resistance or skepticism in society toward their development and deployment. To minimize unnecessary fears and ensure a more balanced state of mind for the people, there is a need to bridge gaps in cinematographic portrayals with the realities of artificial intelligence.

Economic and Financial Implications

Imagining a world where artificial intelligence is the key to Hollywood's success no longer sounds like a storyline from a sci-fi movie. Artificial intelligence will continue to play an increasingly important role in the entertainment industry's moneymaking machine, revolutionizing everything from scheduling to localization and distribution. In essence, AI offers a strategic advantage that changes the way content creators and distributors profit from their assets. Private equity firms, investment banks and institutional banks are the majority of funding groups for studios and producers. According to Variety's report, spending on content at companies such as Disney, Netflix and Apple is expected to increase significantly by 2025, based on data provided by City National Bank and Wells Fargo. In particular, by 2035, AI is expected to generate \$90 billion of GVA for Arts & Entertainment and almost \$1 trillion in Financial Services. \$1 trillion in gross value added for the financial services sector means more businesses like Redbird, which means more money for studios like Skydance to invest in talent like Damon and Affleck, which means more movies and television shows for consumers to enjoy.

Over time, the AI industry has experienced significant revenue growth. The number of artificial intelligence documents increased by more than

Table 2: Worldwide Box Office for Science top ten science fiction films worldwide.

Rank	Movie	Production Budget	Worldwide Box Office
1	Avatar (2009)	\$237,000,000	\$2,923,706,026
2	Avatar: The Way of Water (2022)	\$460,000,000	\$2,317,514,386
3	Star Wars Ep. VII: The Force Awakens (2015)	\$306,000,000	\$2,064,615,817
4	Jurassic World (2015)	\$215,000,000	\$1,669,963,641
5	Star Wars Ep. VIII: The Last Jedi (2017)	\$262,000,000	\$1,331,635,141
6	Jurassic World: Fallen Kingdom (2018)	\$170,000,000	\$1,308,323,302
7	Transformers: Dark of the Moon (2011)	\$195,000,000	\$1,123,794,079
8	Transformers: Age of Extinction (2014)	\$210,000,000	\$1,104,054,072
9	Star Wars: The Rise of Skywalker (2019)	\$275,000,000	\$1,072,767,997
10	Jurassic Park (1993)	\$63,000,000	\$1,058,454,230

400% and the amount of capital invested in AI jumped sixfold. In addition, in the last decade there has been a sharp increase in investments in artificial intelligence by US companies which have led to higher sales, employment and market values. According to industry experts, AI companies are expected to create 13 trillion gross domestic product growth in the next 10 years and China is forecast to be at the forefront of successful deployment and adaptation. The development of new technologies, such as expert systems in the 1980s and machine learning in the mid-2010s, has contributed to this growth in the AI sector. In general, the AI industry has experienced substantial revenue growth and is projected to continue its expansion in the future.

Production costs

Films with an AI themes are classified into two branches: AI films on the level of technical practicality and AI films on the level of subject creation. AI-themed films are distinguished by their technical nature and deep thought. The cost of producing movies with AI themes has evolved over time. The quick advancement of science and technology has affected AI film production orientations and raised production costs. The potential for revolutionizing the process of film production from preproduction to post filming and broadcast can be harnessed through artificial intelligence and machine learning. The quality of production and revenue at the box office can be increased when artificial intelligence is applied in the film industry. Several factors may be to blame for the large cost of animated films with an Artificial Intelligence theme. First, the use of vast amounts of data storage in AI projects

requires a higher resolution to store and retrieve these data which can lead to significant cost savings. Furthermore, complex and inventive technologies requiring significant R&D investment are frequently used in the depiction of artificial intelligence in films. In addition, elaborate visual effects and special effects may be required for the production of AI themed films that could cost a great deal to produce and implement.

Findings

This study traced the intricate mosaic of artificial intelligence representations in science fiction movies, revealing dynamic changes that mirror societal attitudes to technology and ethical considerations. The narrative landscape surrounding artificial intelligence has changed significantly, from the early depiction of AI in films such as *Metropolis* and *Forbidden Planet* to the current complexity of “Her” and “Ex Machina.” The analysis revealed a trend towards humanizing AI characters, who are increasingly being portrayed in films as the protagonists of complex emotions and consciousness. This evolution is reflected not only in the progress of storytelling but also by the growing integration of artificial intelligence into our everyday lives and the ethical questions that it raises. The results of this research reveal the financial and economic challenges of the sci-fi films based on Artificial Intelligence. Significant obstacles are production costs, budgetary constraints, market risks, rapid advances in technology and the saturation of a given genre. To ensure the success and relevance of AI narrative in cinema, filmmakers need to make use

of these complexities so that creative visions are balanced by financial viability.

The findings reveal that artificial intelligence has a dynamic link with science fiction cinema, which shows the evolution in representation of this technology and its considerable impact on attitudes to society, ethical questions as well as technical debate. The increasing complexity of societal attitudes to artificial intelligence is reflected in the subtle depictions of AI in modern cinema. Overall, it is apparent that science fiction cinema and the development of artificial intelligence are mutually reinforcing. We must recognize the responsibilities inherent in telling stories, as filmmakers continue their exploration of AI narrative boundaries. Critical engagement with such narratives could bring us closer to a debate that is more comprehensible to the general population, which in turn impacts society's perception of AI as well as its influence on technological development.

Suggestions

In the coming years, research should focus on the ongoing development of AI in cinematographic stories and real-world technologies. There is a need to pay more attention to the responsibility that storytellers bear in reducing bias and encouraging subtle understandings of AI's impact on society. The gap in real-world innovation, as well as speculative fiction, could be widened by exploring the possibility of filmmakers and technologists working together. In addition, it is vital to include in AI representation a special focus on sound storytelling and ethics considerations. The film industry may play an essential role in raising a more informed and intelligent audience by addressing the problems of prejudice and fear perpetuation. Interdisciplinary cooperation among filmmakers, technologists, ethicists, and social scientists will be essential as AI continues to advance. This collaboration could help to understand artificial intelligence as a whole, promoting an environment where innovation is compatible with society's values and ethics.

CONCLUSION

There was a significant impact on public perception of science fiction films. These films are not just changing the way we talk about technology but also

contributing to a greater understanding of ethics related to artificial intelligence. At a time when they engage in thematic issues, such as identity, consciousness, and the potential security threat to humanity caused by Artificial Intelligence, these movie stories simultaneously raise audiences' awareness of those themes within the context of real-world technology developments. The financial and economic constraints of sci-fi movies based on Artificial Intelligence are multifaceted, encompassing production costs, market risks, technical challenges as well as the impact of genre saturation. In an evolving cinematic landscape, filmmakers and studios must manage these constraints with care in order to balance artistic ambition against financial viability. However, this research also revealed challenges and criticisms as regards how AI is perceived in cinema. Careful consideration is warranted in light of concerns about stereotyping, prejudice, and dissemination of unfounded fears and misperceptions. It is vital to recognize these challenges to build a balanced understanding of the potential and limitations of artificial intelligence. Lastly, this research demonstrates the twofold role of science fiction films as a reflection on public expectations and fears about artificial intelligence and an influence on technical development's trajectory. In navigating the complex interplay between cinema narratives, societal perceptions, and AI's evolution, responsible storytelling has emerged as a crucial factor. As we face the future, in light of its profound impact on our collective understanding of human relations with technology, it is important to think carefully and objectively about how AI will be portrayed in cinema.

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