THE ART OF COLLABORATION: FILMMAKERS AND AI IN INNOVATION

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Abstract: This research explores the impact of artificial intelligence (AI) on the film industry, particularly in Hollywood, where AI enhances scriptwriting, storyboard creation, music composition, special effects, and set design. Using a qualitative approach and semiotic theory, the study analyzes films utilizing AI in production. While AI can reduce manpower, lower costs, and improve efficiency, it also poses challenges, including risks of plagiarism and potential misuse leading to criminal activities.

Keywords: AI, Film, Industry, Film Production

Introduction

Artificial intelligence or AI was created by an expert named John McCarthy in 1956. According to John McCarthy, AI is the science and engineering of creating intelligent machines, specifically creating intelligent computer programs. AI is an act of creating robots or programs that are as intelligent as humans (McCarthy, 2007). The definition of AI according to Marvin Minsky's theory with Seymour Papert, known as the perceptron theory, is the limit of artificial neural networks. According to Marvin Minsky, AI has a function as a computer construct capable of performing tasks that can be done by humans and require intelligence to perform. This approach emphasizes the system's ability to complete tasks traditionally considered to require human intelligence, such as visual perception and language understanding. Artificial intelligence has previously been used for industrial and household needs, aimed at helping humans to work faster and more efficiently.

AI systems have three fundamental components: 1. machine learning, 2. deep learning, and 3. neural networks. Machine learning is heavily used in Google applications where the Google search engine can perform identification. New identification can be done by the Google search engine when a user provides a code that will be processed by the search engine to perform identification and find answers to commands given using that code. The use of deep learning can be seen in smartphones with voice control. Smartphones can detect sound, for example, when a smartphone owner forgets where they put their phone, they can clap loudly and the phone can detect the clapping sound and respond by ringing the ringtone. For neural networks, it can be seen when an airline passenger is about to enter the boarding area and the AI system will detect the passenger's face according to the code given by the staff, and the AI system will mark the passenger's face to ensure security according to the data received.

AI is becoming increasingly prevalent in the digital age. Rapid technological advancements are driving the creation of more innovative solutions. The development of AI with more complex computer systems aims to meet the

needs of modern society. The demand for AI has become quite significant in various industrial sectors, including the transportation, film, healthcare, and other industries.

The development of AI systems requires the application of artificial intelligence in the real world that can provide positive changes, including improving quality and providing efficiency for artificial intelligence users and influencing the economic sector of its users. The following is the use of AI in the transportation sector. The use of AI systems in transportation can be seen in Google applications that have self-driving Google. Google application users can download the AI system and easily use the AI system to perform fairly accurate navigation with GPS facilities and cloud services that can make it easier for drivers to find addresses according to the radar directed by the AI system. AI systems can provide quality improvements to transportation systems.

Methods

AI systems are used in the film industry. AI plays an important role in addressing the needs of the film industry. This research uses a qualitative method with a semiotic analysis approach to show changes in the film industry sector through the context of film production management in explaining the phenomenon of AI related to film values. Semiotics uses a sign system from Roland Barthes. Data collection is done systematically and by collecting case studies of film studios that use AI to see the use of AI systems by filmmakers with the films produced. This method is used to uncover future filmmaking with AI in the present. This research focuses on the use of AI systems as a solution for film studios that use them with filmmakers as the subjects who produce films.

Semiotics can be examined by looking at the form, content, and context chosen to analyze the elements that form AI's contribution to filmmaking. Form becomes the forming element of the filmmaker's collaboration with AI in filmmaking. Content can be seen in the meaning of the form of collaboration, and context can be seen in the variety of conditions when a film as an object is produced and interpreted with different interpretations by others. The symbols and meanings of AI used in films have added value to those films.

Result and Discussion

AI usage in the film industry has seen a significant increase with the development of increasingly complex and innovative AI systems.

The Future Filmmaking with AI:

a. Studio in Hollywood
b. AI is solution
c. AI can change the paradigm pattern

Case study: The film *The Irishman* uses artificial intelligence to create character designs for Robert de Niro, Al Pacino and Joe Pesci by adapting changes in facial design to changes in time in the film. As the film's stars are all much older than most of their on-screen characters, ILM was brought to de-age the actors for the various time periods in the film. The film covers decades in the lives of these characters. Robert de Niro and Joe Pesci are both 76 years old, and Al Pacino is 79, yet in the film, de Niro alone appears as Frank Sheeran aged: 24, 36, 41, 42, 47, 55, and then eventually his actual age 76. The 209-minute film contains 1750 visual effects shots, and as the film was for Netflix is was mastered in 4K, including all the VFX.

For example, the de-aged Joe Pesci was de-aged to a thinner version of Russell Bufalino than the actual actor Joe Pesci was at that similar age. In this way, Helman was focused on the arc of the characters in the film, not necessarily the perfect likeness of the same actor but younger.

Filmmaking consists of six stages: development, pre-production, production, post-production, distribution, and exhibition. The development stage involves the development of the story by the director, producer, and screenwriter. This stage requires a script that will be realized as a film. AI can be used to generate scripts. AI algorithms can identify plotlines by analyzing story structures. Filmmakers can access applications like ScriptBooks, which use AI to predict film outcomes. This application has AI that analyzes scripts. AI algorithms validate content and story according to codes specified by the filmmaker. This application can be accessed at www.scriptbook.io. Using AI to assist in scriptwriting can make the process faster and more efficient. A case study of Sony Pictures using ScriptBook to analyze 62 of their films exemplifies this.

AI can also be used in the pre-production stage in collaboration with filmmakers for location scouting. AI can analyze locations based on the specific needs of the story. Filmmakers need to input specific location requirements into the AI system. This includes data such as setting, required location time, specific demographics needed, and the desired look and mood for the story. Filmmakers can use AI tools like Refsee, which has an extensive database suitable for various story needs. Filmmakers can also access Google Earth and Street View for virtual exploration of potential locations. Using AI for location scouting can streamline the work of production managers and make the location manager's

job faster and more efficient.

The development of increasingly complex and innovative AI can also facilitate film promotion. AI systems can help analyze the audience base and the popularity of actors, providing a percentage of the actor's popularity in relation to film promotion. A case study of Century Fox using the Merlin application for the film Morgan serves as an example.

Some examples of film studios using AI in film production include:

- Warner Bros uses the AI application Cinelytic AI, which has the function of predicting film success and box office estimates."
- "20th Century Fox uses an AI application called Merlin. The use of AI aims to find the right match between the film and the desired genre and audience classification, along with demographic information about the film."
- "Sony Pictures uses ScriptBook with the aim of analyzing 62 of its films."
- "The Irishman film used AI to design the characters of Robert DeNiro, Pacino, and Pesci, and for special effects in the film using the Medusa application.

These translations emphasize the specific AI applications used by these studios and their purposes.

AI innovations in film production offer **reduced manpower, lower production costs, and increased efficiency**

However, AI also presents challenges like the potential plagiarism of visual works and the risk of global criminal activities arising from irresponsible AI misuse.