# WILL AI REPLACE HUMAN JOBS IN THE FILM PRODUCTION?

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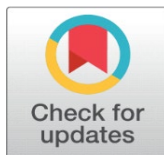
## ABSTRACT

Artificial Intelligence is utilized in multiple steps of film production such as script writing, Pre-production works, identifying locations, casting the actors, calculating the budget of the film, Box-office performance, Demographics of the audience, enhancing VFX, animations, CGI, music and Post-production works (Editing, colouring, sound design). This article explores the arrival of AI in film production, popular filmmaker's and artists' opinions on AI, how AI benefits and challenges human jobs in the Film industry, and AI which are used in every stage of filmmaking. This article elucidates about movies generated through AI, how popular movie production companies like 20th Century Fox, and Warner Bros. use AI as a tool to enhance their films, AI which are used to generate films, and jobs that AI is unlikely to replace. This article concludes by stating how humans should use AI in order to sustain in this era of AI.

**Keywords:** Artificial Intelligence (AI), Stages of Film Production, AI's Arrival in the Film Industry, Benefits and Challenges of AI, Movies Generated Through AI, Jobs AI Unlikely to Replace

## 1. INTRODUCTION

Artificial Intelligence is predominantly utilized in different phases of film production, yet it is a debatable topic because it has become a threat to human employment. Companies and studios prefer AI over humans because it saves time and money and delivers quality products more than humans could possibly deliver. Actors and writers of America protested against the utilization of AI in the film industry and requested to place a limit on the use of AI particularly in scripting, the performance of an actor, and images generated by AI. Since the popularity of AI

gained in recent years, many production houses have begun to use AI for script development. Generative AI like SORA can be used in various phases of filmmaking. Artificial Intelligence is utilized in different phases of film production such as script writing, Pre-production works, identifying locations, casting the actors, calculating the budget of the film, Box- office performance, Demographics of the audience, enhancing VFX, animations, CGI, music and Post-production works (Editing, colouring, sound design).

*"AI programmes can expedite the casting process by conducting auditions on their own. Additionally, casting decisions are made more accurately and effectively."*

Said Abhijit Ghosh in his article "Artificial Intelligence as an Innovation in the Film Industry" (2023) published in ResearchGate.

ScriptBook is an AI tool which is used to analyze a script in the pre-production stage, predict the box office performance, and find the Territoriality forecasts. It provides a comprehensive analysis of regions where the film is likely to have a suitable audience. This report greatly influences the distributors and International sales agents to have an eye on the film. Scriptbook provides Target Demographics and Content management to their clients.

Deepfake is an AI which is used to enrich animation quality and visual effects in films through machine learning, computer vision and deep learning Techniques. Imitating human behaviour with intelligence is called Machine learning. Computer vision is a type of AI which allows machines to comprehend and interpret visual data, mimicking human perception and comprehension of their surroundings. Using the Deep learning method, AI can recognize complex patterns in images and audio like the human brain perceives. With the use of Deepfake, actor's faces can be swapped convincingly.

AIVA is an AI which can generate new songs according to our own style. We can customize the generated song without any license or copyright issues. It can create melodies, harmonies and rhythms by using generative algorithms in more than 250 different styles.

The impact of AI on human innovation, the reliability of content produced by AI, the ownership and rights of works produced by AI, and the potential for exploitation or abuse of AI technology are just a few of the moral, social, and artistic concerns raised by all these capabilities.

## 2. FINDINGS AND DISCUSSION
### 1) Opinion Of Writers About Ai in The Film Industry:

Several novelists, poets, musicians, and other creatives have already sued AI corporations in the US for allegedly stealing their works and exploiting them to create new works without giving them proper recognition and without providing royalties.

Famous novelists like Elin Hilderbrand, John Grisham, and Jonathan Franzen filed legal cases against the chatbot technology of OpenAI.

Prominent novelist Douglas Preston joined hands with the authors mentioned above and filed a case against ChatGPT. In his complaint, he mentioned that he was stunned because he questioned ChatGPT to explain a small character in his novel. ChatGPT provided even minute details about the character which is not available on any websites or Wikipedia.

A collection of authors, including Michael Chabon, Ayelet Waldman, and Matthew Klam, filed a collective lawsuit against OpenAI and Meta, which has also created artificial intelligence technologies, alleging copyright infringement.

Mary Bly, a historical romance novelist who writes with the pen name Eloisa James, stated she became involved in the Authors Guild lawsuit because she was concerned that technological corporations would continue to steal and copy artists' works if they did not set boundaries around them.

AI-generated movies are beginning to become more popular, even if AI in filmmaking is still a sensitive topic. Films that employ AI to develop or improve some or all of their content such as pictures, animations, music, scripts, or editing are referred to as AI-generated films.

## 3. MOVIES GENERATED THROUGH AI
### 3.1. CRITTERZ

The first short animated film was entirely created utilising Dall-E's AI-generated images. The animated science documentary unveils the audience to an uncharted forest home to enigmatic small Critterz with surprising personalities. The storyteller immerses the audience in a solitary woodland teeming with previously undiscovered Critterz until the narrator is abruptly and unexpectedly interrupted by the same creatures. DALL-E was used in this project to produce all of the characters and backdrop settings. This made it possible for the artists to generate hundreds of images every day, which sped up the process of visualising their original works. Animators and designers were recruited to transform these two-dimensional landscapes into a three-dimensional world once the images and characters were developed.

### 3.2. EXPANDED CHILDHOOD

A short film that creates a bizarre and nostalgic collage by using DALL-E 2 to stretch the borders of old family images. DALL-E is an AI which generates images according to the prompts given. It was developed by a company called Open AI which created ChatGPT.

### 3.3. PLSTC

In 2022, Laen Sanches directed PLSTC, an animated short film about plastic pollution and other waste-related issues plaguing the oceans. The movie uses visuals produced by an AI called Midjourney to illustrate the harm that humans have caused to marine life.

### 3.4. THE FROST

In the 12-minute movie The Frost, each shot is produced by the image-generating AI DALL-E 2 using a human-written script. Josh Rubin has written and directed the film and it is the first film entirely generated through AI in the world. The still photos in the movie are animated by D-ID, another AI technology.

### 3.5. GIVEN AGAIN

Given Again is a short film directed by Jake Oleson that creates a surreal effect by transforming 2D photographs into 3D virtual objects using a technology known

as neural radiance fields, or NeRF. In 2023, the movie was screened at the Artificial Intelligence Film Festival by Runway ML in New York and it won a Silver medal in the contest.

## 3.6. SUNSPRING

Filmmaker Oscar Sharp associated with an AI researcher Ross Goodwin made a sci-fi short film called 'Sunspring' starring Thomas Middleditch, Elisabeth Gray and Humphrey Ker using an AI named Benjamin. It was the first film written entirely by an AI bot. The film secured a position in the top 10 out of hundreds of films contested in the Sci-Fi London Film Festival (2023).

In India, a novel named 'Maharaja in Denims' written by Khushwant Singh is being made into a feature film of the same name with the help of Generative AI. The Tamil director Guhan Senniappan intends to incorporate 2.5 minutes of AI-generated scenes into his feature film, Weapon. Soon India will join the countries that produced films using AI.

## 3.7. EXAMPLES OF FILMS THAT USED AI IN MULTIPLE ASPECTS OF FILMMAKING

AI involvement in filmmaking starts from the Pre-production stage to the Distribution and Marketing stage. Popular production companies like WB, Marvel and many more started using AI in multiple stages of film production. Some of the examples are as follows,

| COMPANIES / PROJECT | AI USED | STAGE OF FILMMAKING |
|---|---|---|
| Warner Bros. for "Logan" | Cinelytic | Casting and Film's Box office success |
| Disney for "Avengers: Infinity War" | FaceDirector | Adjust an actor's acting in post-production |
| "The Irishman" - Film | Deepfake | De-age actors |
| "Morgan" - Film | IBM Watson, Chatbots | Used to make a movie trailer and market the film. |
| Sky Walker sound, Part of Lucasfilm | AI algorithms | Classify and recover sounds from their library to speed up the process of sound design. |
| Warner Bros. for "Aquaman | AI chatbots and algorithms | Used for Marketing purposes |
| Netflix" | AI algorithms | Suggestion of films according to their past data |

## 4. OBSERVATIONS
## 4.1. BENEFITS AND CHALLENGES OF USING AI IN THE FILM INDUSTRY
### 4.1.1. BENEFITS
#### 1) Creative process:

In order to produce fresh narrative ideas, plot outlines, and even full screenplays, AI algorithms can analyze enormous volumes of data, including audience preferences, existing scripts, and plot structures. This can encourage originality, speed up the scriptwriting process, and assist filmmakers in creating content that appeals to specific audiences.

#### 2) Pre-production:

Pre-production planning can be assisted by AI technologies that analyze location scouting data, estimate budget requirements, schedule shooting days, and

even forecast possible dangers or obstacles. Filmmakers can do this to maximize resources, save time, and guarantee more seamless production procedures

### 3) Computer-generated imagery and Visual effects:

AI-driven software and algorithms improve computer-generated imagery (CGI) and visual effects production. These tools can reduce production costs and time while producing more accurate and visually spectacular effects by automating activities like motion tracking, rendering, and compositing

### 4) Post-production and Editing:

Advanced functions including automatic video editing, scene segmentation, colour grading, and sound processing are available with AI-based editing tools. With minimal manual interaction, these technologies assist generate professional-quality outcomes while streamlining the post-production workflow and increasing productivity.

### 5) Marketing and analysis of Audience:

Through data mining from social media, streaming services, and other sources, AI algorithms can examine audience behaviour, choices, and sentiment. Using this data, studios and filmmakers can better target audiences, distribute their work more effectively, and maximise the effectiveness of their marketing initiatives.

## 4.2. CHALLENGES

### 1) Unimaginative and loss of originality:

Filmmakers are at risk of losing their creative and unique touch if they depend too much on AI or algorithms to create their work. Films with formulaic or derivative themes that lack originality and artistic depth might be created using automated procedures for content development, scriptwriting, and editing.

### 2) Moral concern:

AI brings up moral concerns about protected content, ownership, and authorship. Automated content creation has the potential to cause ownership and credit conflicts by blurring the boundaries between creative expression and intellectual property rights.

### 3) Danger of losing job:

In the film industry, automation of jobs that were formerly done by humans like scriptwriting, editing, and visual effects could result in employment displacement. AI-driven technologies may make some jobs less in demand, which could affect job prospects for creative professionals like writers and editors.

### 4) Scepticism about privacy:

Data collecting, profiling, and target advertising privacy issues are brought up by AI- driven audience analysis and marketing solutions. When using AI to examine audience behaviour and preferences, filmmakers and distributors have to deal with privacy laws and moral dilemmas.

### 5) Affordability:

Although AI technologies have the potential to reduce costs and increase efficiency, they may also necessitate a large investment in resources, infrastructure, and training. Accessing and integrating AI-driven solutions into their productions may be difficult for independent filmmakers or smaller production businesses with tighter resources.

## 5. CONCLUSION

There are jobs unlikely to be replaced by AI in the Film industry such as Director, Screenwriter, Actor, Film producer, Cinematographer, Film editor, Production designer, Sound designer, Stunt performer, Makeup artist etc. A film director's responsibilities include overseeing the entire production process, forming the artistic vision of a piece, and making creative judgments. While AI can help with things like shot ideas and scene arrangement, it is not as good at recreating the emotional intelligence, storytelling skills, and intuition that make a successful filmmaker. While AI can write scripts or supply ideas for stories, it cannot recreate human creativity, empathy, and knowledge of narrative structure which are necessary for character development, plot arcs, and dialogue that is both emotionally compelling and realistic. AI can never truly capture the distinct voice and perspective that screenwriters bring to their work. Building genuine relationships with other people on screen, expressing complicated characters, and evoking emotions are all part of acting. Although AI can be utilized for voice synthesis and facial animation in computer-generated imagery (CGI) characters, actor's nuanced performances and subtle human expressions are priceless. The technical components of cinematography, including colour grading and camera calibration, can be aided by AI tools, but a skilled cinematographer's creative sensibility and personal assessment are essential. The artistic judgment and storytelling prowess of a human editor is crucial for creating a coherent and captivating cinematic experience, even though AI can automate some editing chores like scene segmentation or footage arrangement. AI can help with concept art and design visualization, but only human designers possess the inspiration, ingenuity, and attention to detail needed to turn a screenplay into a visually stunning reality. The emotional depth, inventiveness, and artistic expression provided by human composers and sound designers cannot be duplicated by AI, despite the technology's ability to produce music and soundscapes. The physicality, agility, and authenticity of live stunt performances are crucial for producing realism and immersion in films, even when AI can replicate action scenes or motion capture performances. The practical skill, meticulous attention to detail, and creative flair of human makeup artists and hairstylists are essential for creating realistic and emotional characterizations, even when AI can help with digital makeup or character design. In summary, artificial intelligence also known as AI has the potential to enhance many parts of filmmaking, but it is unlikely that AI will replace human skill, artistry, and intuition in many creative, technical, and interpersonal positions in the film industry for the foreseeable future.

### CONFLICT OF INTERESTS

None.

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