



# LIGHTS, CAMERA, ALGORITHM: THE FUTURE OF AI IN FILM PRODUCTION

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## Abstract

The economic impacts – including budget management and total production costs – that AI-driven production tools have on the film industry are immense. The paper will analyze the Netflix TV show *The Eternaut* and the AI-powered film, television, and gaming studio Staircase Studio to investigate the benefits AI offers. Industry data, such as market growth analysis, and expert perspectives from James Cameron and Ted Sarandos, will be incorporated for a more comprehensive evaluation of AI implementation and the ensuing public reaction. It will then weigh the numerous benefits and harms AI brings to the future of the film industry, representing diverse and various voices. To conclude, the paper will examine the implications that today's AI presents to the film industry, which are simultaneously applicable to the broader world. This discussion will give the readers a sense of what to expect in the future that will be predominantly permeated by AI.

## Keywords

Artificial Intelligence; film industry; filmmaking; future potential; Netflix; Staircase Studio

## Introduction

What seems real is revealed as fake more often than not, and the boundary between the two is increasingly blurred by Artificial Intelligence (AI), to a concerning extent. Immensely significant and widely applicable, AI is rapidly pervading practically all industries, and the film industry is no exception. In many current applications, AI in film production is not about replacing the director's creativity or the cast's talent, but about complementing their work and "achieving more with less" (Medium). Nevertheless, its potential to outright replace people's jobs is a growing concern. The tasks AI-driven production tools perform include creating realistic character animations, generating complex visual effects, enhancing image resolution, and assisting with tasks like 3D model generation and texturing (Medium).



Figure 1: Marvel's *Secret Invasion* Opening Credits, Entirely Created by AI

AI-assisted and AI-driven production tools are starting to change the essence of contemporary film entirely as seen in Figure 1. AI is being rapidly integrated into the production processes of films – pre-production in particular – prompting crucial economic questions: who will benefit from these tools, and how will those benefits be distributed across the industry? AI lowers barriers to entry for small, independent filmmakers by making visual effects, editing, and virtual production processes more accessible. Yet, the greatest short-term economic gains are likely to head toward large studios that have the capital and infrastructure necessary to maximize the tools' efficiency. In this light, AI may democratize access to certain production capabilities, but this does not necessarily entail democratizing economic and market power. Hence, its long-term impacts will depend not merely on its technological capabilities, but also on who controls it, to what extent human labor will be protected, and whether AI will be used to improve human work or replace it entirely. In this paper, AI-assisted refers to tools that support human creators in tasks such as image enhancement or sound cleanup, while AI-driven refers to systems that independently generate substantial creative products such as AI-generated images, voices, scripts, or effects with reduced human input. Likewise, the term democratization does not necessarily mean equal economic benefit; rather, it refers to broader access to production capabilities and lower-cost creative tools. Access to technology may increase even when ownership of capital and market power remains concentrated among larger firms.

## Methods

This paper will utilize two case studies for comparison and consideration of the use of AI in the film industry.

### Case Studies

The virtual production stage of filmmaking offers significant cost-saving opportunities, particularly in effects-heavy sequences that would otherwise require expensive location work or labor-intensive postproduction. One major example is Netflix's use of generative AI in *The Eternaut* to depict a collapsing building in Buenos



Aires. According to Ted Sarandos, the sequence was completed “10 times faster” than it would have been through traditional workflows. However, this figure should be interpreted carefully. A tenfold increase in speed may indicate that AI is most effective at accelerating repetitive or technically demanding VFX tasks, rather than replacing the creative decision-making involved in designing the scene itself. In other words, AI may optimize execution more than imagination. Even so, for a large company like Netflix, this efficiency translates into a major economic advantage: the studio can produce visually ambitious content at lower cost while still maintaining a polished final product.

The virtual production stage of filmmaking presents numerous opportunities to save costs through the use of AI. While location shooting is one of the most expensive parts of film production, virtual production can effectively mitigate high costs by recreating the environment digitally. This type of replacement has been seen in a number of films. For example, Netflix used generative AI for the first time in one of its TV shows, *The Eternaut*, “to show a building collapsing in Buenos Aires” (The Guardian). This was done in partnership with Scanline VFX and Netflix’s creative team. Netflix co-chief executive Ted Sarandos later revealed that “using AI-powered tools, they were able to achieve an amazing result with remarkable speed, and that VFX sequence was completed 10 times faster than it could have been completed with traditional VFX tools and workflows.” He said the use of AI enabled Netflix to fund the show at a much cheaper cost than is usual for a large-scale production of the like, and that it included effects that would not have been feasible on the show’s budget. However, this number should be interpreted carefully. A tenfold increase in speed may indicate that AI is most effective at accelerating repetitive or technically demanding VFX tasks, rather than replacing the creative decision-making involved in designing the scene itself. In other words, AI may optimize execution more than imagination. Even so, for a large company like Netflix, this efficiency translates into a major economic advantage: the studio can produce visually ambitious content at lower cost while still maintaining a polished final product.

Another example is Staircase Studio, an AI-based film, television, and gaming studio. According to The Australian, Staircase Studio can reduce production costs from \$500,000-\$1 million per minute to \$10,000-\$20,000 per minute. This, however, requires qualification. Cost reductions, especially on such scale, would only be meaningful if the resulting output quality and theatrical viability are not harmed. Currently, such models appear feasible for short-form or experimental content rather than for every premium cinematic production. Such limitation notwithstanding, the case remains significant because it demonstrates AI’s potential to make high-quality visual storytelling more accessible to independent creators who previously lacked the resources to compete. This can, therefore, help bridge the gap between dominant studios and small filmmakers, bringing new perspectives to the industry.

## Results and Discussion

### *Industry Data*

The Morgan Stanley Report shows that AI-driven generative tools could reduce expenses in TV and film by up to 30%, with average cost cuts of ~10% across media industries. With the advent of AI, new and smaller companies should be able to leverage technology to produce high-quality content, challenging the major leaders of the industry. Another report by Market.us, seen in Figure 2, projects that the global AI in the film market will reach \$14.1 billion by 2033. The factors driving this growth include the “demand for enhanced efficiency and cost reduction in film production, the capability of AI to generate detailed and realistic visual effects, and the growing need for personalized content on streaming platforms.”

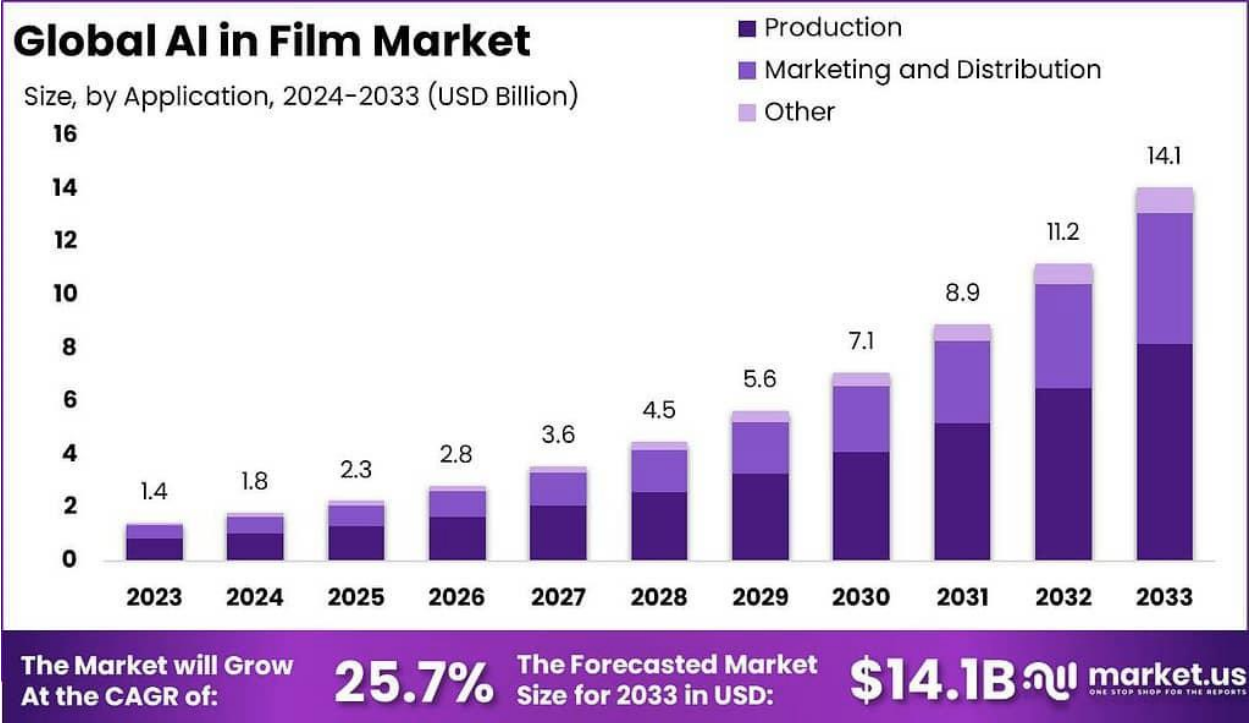


Figure 2: Graph indicating the projected growth of global AI in the film industry

In particular, the market for generative AI in movies is projected to grow from \$481 million in 2024 to \$4.49 billion in 2033 – as shown in Figure 3 – indicating a nearly 10x increase over the decade. These two graphs highlight an aggressive compound annual growth rate (CAGR) and reflect the increasing economic significance of AI in filmmaking.

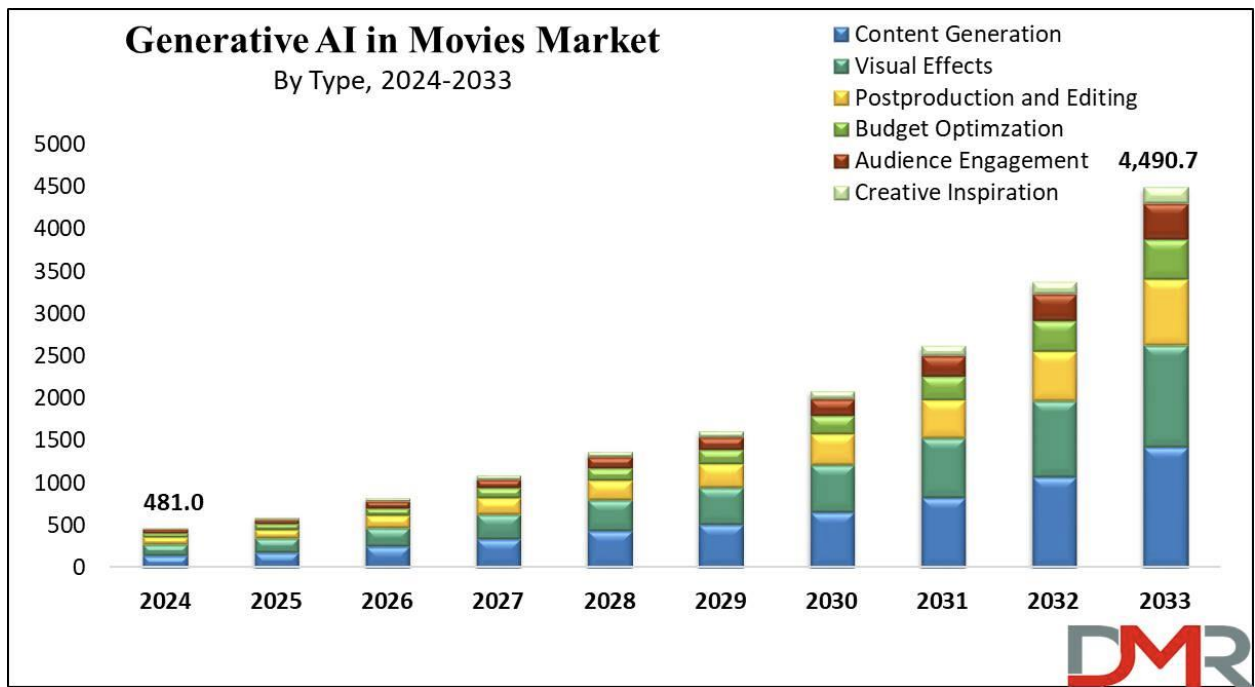


Figure 3: Graph indicating projected growth of generative AI in the film industry



## **Limitations and Ethical Trade-offs**

Unfortunately, immense change brings not only benefits but also harms and trade-offs. These include concerns for job displacement, creative ownership issues, and loss of artistic integrity. First and foremost, AI's efficiency threatens jobs. Labor unions and artists fear job losses, "with a 2024 study estimating 204,000 Hollywood roles – especially in VFX and postproduction – at risk" (Medium). Also, a 2024 study found 77% of 300 industry leaders employed AI to supplant human roles, particularly in VFX, sound engineering, and concept art (The Hollywood Reporter). Such a plethora of job losses leads to concerns for creative authenticity. According to Reuters, the 2023 Hollywood strikes made AI one of the industry's most urgent labor issues, as unions pushed for contractual protections against the unauthorized use of performers' likenesses, voices, and creative labor. This reveals that the economic question is not only whether AI reduces costs, but also whose labor becomes more vulnerable in the process. If studios use AI primarily to weaken bargaining power or replace specialized creative roles, the financial gains generated by the technology will be distributed upward rather than shared across the workforce. USC's Jonathan Taplin claims AI's range of generating content is limited, aggravating the originality of media (MIT Sloan). James Cameron, via Variety, expressed skepticism about AI writing scripts that can move audiences, referring to their reliance on recycled, repetitive ideas (Variety). BGR notes public backlash against the AI visuals in "Late Night With the Devil," where AI-generated transitional graphics sparked boycott threats (BGR). Audience response suggests that viewers do not reject all AI uses in film equally. Survey evidence indicates that audiences are generally more comfortable with AI in supportive or background functions than in generating core creative elements such as actors or major visual content (YouGov). Acceptance also appears to increase when AI involvement is clearly disclosed and transparent. By contrast, backlash surrounding films such as *Late Night with the Devil* suggests that viewers are more resistant when AI use is clear and appears to supplant human labor. Not only the public, but voice actors expressed their concerns regarding AI as well. Rehlinger, a French voice actor renowned for his dubbing for Ben Affleck, Joaquin Phoenix, and Puss in Boots, is fighting to protect his job in the era of AI: "I feel threatened even though my voice hasn't been replaced by AI yet" (Reuter). At the same time, this does not mean that artistic integrity is necessarily weakened whenever AI comes into play. In some contexts, AI may open aesthetic possibilities by allowing filmmakers to visualize environments that would otherwise be financially impossible. The key point is whether human judgment is maintained, and when it is, AI can add a new layer of artistic experimentation instead of threatening it. Therefore, the economic impact of AI must be understood with a complex, comprehensive viewpoint.

Alongside the colossal economic upturn that they bring, AI tools allow the democratization of technology for indie filmmakers. Indie filmmakers are independent filmmakers who often lack the technology, money, or infrastructure to create large-scale productions. However, AI can change this drastically. Indie creators can now access tools like Staircase Studio or Wonder to generate high-quality visual effects without the need for dramatic budgets. As such, Xavier Collins, Co-founder of Wonder, claims that "the power to craft and create visually striking stories is being rapidly democratized through technology... unlock[ing] new avenues of creativity and empowering [filmmakers] to do more with less" (The Australian). This directly assuages loss of authentic creativity because numerous filmmakers are now enabled to make higher-quality films in terms of VFX, sound editing, virtual production, and other ways in which AI can assist. Furthermore, according to Netflix co-chief executive Ted Sarandos, "AI represents an incredible opportunity to help creators make films and series better, not just cheaper. So this is real people doing real work with better tools" (Bonifield, 2025). Likewise, Academy Award-winning director James Cameron claims that "AI can be helpful because it can fill in some of those detail levels and allow us as artists to stay at a higher level"



(Perkel, 2025). That is, with the right balance of work distribution among human workers and AI, AI can become an extremely valuable tool that entails numerous benefits without threatening jobs.

These projections are meaningful because they indicate where investment is likely to flow. Investment is flowing into generative visual effects and personalized content systems for streaming platforms. That is, the first and largest stakeholders to benefit are likely to be major studios that have the resources to develop these tools and utilize them most efficiently. Although independent creators may still benefit from lower-cost access to certain capabilities, their gains are more likely to be creative and operational than structural. In other words, AI may widen participation in content creation without equally redistributing profit or market power.

## Conclusion

So, what can we expect in the future? First, a significant number of jobs will be lost. These occupations include video editors, VFX artists, colorists, sound designers, storyboard artists, and even some screenwriters (Medium). Accordingly, appropriate measures must be implemented to mitigate job losses and displacement caused by AI. This can look like re-skilling and up-skilling programs to train creative professionals in AI-assisted tools so they can stay competitive (Cisco). Another method can be to develop union protections and regulations by strengthening labor contracts and pushing for ethical AI use (Reuters). While there are many ways to tackle the problem, cooperation between workers and companies will always be essential: without it, the industry's workforce may face significant consequences. There must also be a focus in ensuring that AI does not replace, but rather augment, human work. This can help minimize not only job loss but also loss of artistic integrity and creative ownership issues while bringing numerous exclusive benefits. At the end of the day, though, AI in the film industry is too recent: the number of relevant data and case studies is far too limited, making the future of AI mostly, if not entirely, unpredictable. Therefore, implementing strict measures to prevent the potential of AI from causing any sort of harm seems more important than ever.

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## **Author's Bio**

Kaydn Jung is a rising senior at Seoul Foreign School with plans to study filmmaking and the film industry in college. To date, he has directed and produced two short documentaries and remains interested in conversations surrounding AI use as a divisive tool for future film endeavors.