Synthetic Media Research Network

The impact of AI in the cultural and creative sectors

Sector Report: Film and Television

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Definition of the sector:

The film and television sector addressed in this report includes all aspects of the production of film and television content, the marketing of content, and its distribution through cinema, broadcast, streaming and online platforms.

The film/television value chain can be subdivided into the following stages of creative and business activity:

- Concept and Development (writing) of film/TV content;
- Creative packaging and pre-prep (contracting of key creative talent);
- Financing (film) or Commissioning of content (television);
- Preproduction (prep), Production (shooting/recording) and Postproduction;
- Sales, distribution and marketing;
- Exhibition (film distribution through cinemas), Streaming and Broadcast (television).

In the film and television industries, the activities within the value chain are carried out by multiple businesses ranging from major global corporations to SMEs, micro businesses and self-employed individuals.

Exclusions: this sector report does not address the physical infrastructure of the film and television industries (broadcast communications infrastructure, studio estate, cinema complexes).

1. Current uses of Artificial Intelligence

This sector report focuses on the uses in the film and television industries of Generative AI (GenAI), intelligent systems able to generate novel content, as distinct from traditional AI[1]. The following description of current uses of GenAI maps to the structures of the film and television value chain.

1.1 **Concept and development**

1.1.2 Chatbots based on Large Language Models (LLMs) are used to develop the initial concepts for films and TV programmes. Screenwriters have adopted this use of GenAI, which can also be used to create pitch decks and visuals required for project pitching meetings.

1.1.3 Screenwriting for feature films and television drama (scripted content) has used specialist software for several decades, and AI is now being integrated into these packages (eg Nolan AI[2]). Chatbots are now routinely used for story structuring and, by some writers, for drafting scenes. They are also used to automate certain significant alterations to scripts, such as the location/cultural context of a drama.

1.1.4 Script Analysis. 'Discriminative AI' tools such as ScriptReader[3] and DeepStory[4] are used to analyse writers' creative work, providing feedback on issues such as story structure and pace. AI tools have also been developed to predict audience response to the content described in a script, such as StoryFit[5].

1.2 **Creative packaging and pre-prep**. GenAI tools such as Largo[6] support script breakdown and analysis for casting purposes.

[1] https://www.forbes.com/sites/bernardmarr/2023/07/24/the-difference-between-generative-ai-and-traditional-ai-an-easy-explanation-for-anyone/
[2] https://deepgram.com/ai-apps/nolanai
[3] https://scriptreader.ai/
[4] https://www.deepstory.ai/#!/
[5] https://storyfit.com/research-insights/
[6] https://home.largo.ai/

1.3 **Financing and Commissioning.** AI tools such as ScriptBook[7] and Vault[8] are used by producers to analyse the market potential of submitted screenplays. Similar predictive analytics in the pre-AI era were frequently inaccurate; data on the new AI-powered systems is not yet available. Warner Bros film studio has set up a partnership with Cinelytic, using AI methods to improve greenlighting decisions[9].

1.4 **Preproduction, Production (shooting/recording) and Postproduction**.

1.4.1 AI tools help streamline production processes before and during a film or television shoot, including generating schedules, call sheets, daily production documents and shoot reports (eg Filmustage[10]; Scenechronize[11]).

1.4.2 In film drama, the integration of GenAI into camera technology has enabled novel techniques such as the ageing and deaging of actors in real time, on set during their performance[12], a process that was previously achieved through AI processes during postproduction[13]. Television has used AI-based de-ageing for drama series, for instance the South Korean show *Big Bet* (2022) in which veteran star Choi Min-sik was de-aged to play the 30-something lead role, Cha Mu-sik[14]. Korean broadcaster JTSC used deepfake technology to resurrect the deceased TV host Song Hae in the drama, *Welcome to Samdal-ri* (2024)[15].

1.4.3 In sports television, multiple uses of AI are supporting broadcasters:

1.4.3.1 AI-driven tools such as Prime Vision's 'Defensive Alert' show viewers predictions of potential 'blitzes' (defense players' moves) in American football[16].

1.4.3.2 Curation of sports highlights is driven and automated by AI systems[17].

1.4.3.3 LLMs are used to enhance fan experience, by creating automated AI commentary[18].

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[7] https://www.scriptbook.io/#!/

[8] https://vault-ai.com/ For an extended outline of these AI tools, see: Bisson, Guy. 2024. 'Artificial Intelligence in TV and film creation, production and distribution' *Ampere Analysis* https://vimeo.com/944787175/c68234d4a6

[9] https://www.cinelytic.com/

[10] https://filmustage.com/

[11] https://www.ep.com/scenechronize/

[12] https://blog.metaphysic.ai/ai-hollywood-miramax-here/

[13] https://www.wired.com/story/indiana-jones-and-the-dial-of-destiny-de-aging-tech/

[14] https://www.youtube.com/watch?v=L7-UFtcFIDk

[15] http://koreanfilm.or.kr/eng/news/news.jsp?mode=VIEW&blbdComCd=601006&pageRowSize=10&seq=6077

[16] https://www.nytimes.com/athletic/4969578/2023/10/18/thursday-night-football-amazon-prime-vision/

[17] https://research.ibm.com/publications/automatic-curation-of-sports-highlights-using-multimodal-excitement-features

[18] https://www.ibm.com/blog/enhancing-the-wimbledon-fan-experience-with-ai-from-watsonx/

1.4.4 For television wildlife programmes using fixed cameras for 24/7 tracking of animals, AI developers have used computer vision and machine learning to automatically identify species appearing in the recorded video[19]. New AI systems enable the monitoring of the multiple fixed camera video feeds used in this form of programme making[20].

1.4.5 AI is used to generate closed captions for television, or to create semi-automated workflows in captioning[21].

1.4.6 Editing. While many AI systems have been developed to enable shot categorisation and selection, and to automate the edits of sequences[22], in professional film and television postproduction it is market leaders such as AVID[23] and Adobe[24] that have led the integration of AI into existing postproduction software. For example, searching for specific shots and dialogue lines in large corpus files is accelerated by 'ScriptSyncAI'[25], which indexes all audible dialogue and syncs clips to lines in a film. Adobe Firefly[26] incorporates tools that enable the editor to expand a medium shot into a wide shot; its 'Generative Fill' allows changes or additions to the background of shots. Disney Research Zurich has developed an AI system that can enable a director to change the emotional expression of an actor in a take during editing[27].

1.4.7 Dialogue editing and ADR. The process of 'cleaning' audio recorded on location can now be automated using AI processes, a service that is now mass marketed, and sometimes at no cost to the consumer[28]. Automated Dialogue Replacement (ADR) has traditionally involved hiring actors and recording studios during post-production, however AI voice cloning enables the automation of this process[29], including packages that integrate the revoicing of actors lines with audio post workflows[30].

1.4.8 Dubbing, translation and subtitling. AI developers offer packages to support voice dubbing in audio postproduction[31]. Translation services are increasingly available as part of AI video packages[32]. In television, the use of AI to power translation is used not just in individual

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[19] https://www.bbc.co.uk/rd/blog/2020-06-springwatch-artificial-intelligence-remote-camera
[20] https://www.bbc.co.uk/rd/blog/2020-06-springwatch-artificial-intelligence-remote-camera
[21] Than Htut Soe, Frode Guribye, and Marija Slavkovik. 2021. Evaluating AI assisted subtitling. In Proceedings of the 2021 ACM International Conference on Interactive Media Experiences (IMX '21). Association for Computing Machinery, New York, NY, USA, 96–107. https://doi.org/10.1145/3452918.3458792
[22] eg https://www.descript.com/video-editing
[23] https://www.avid.com/avid-ada
[24] https://www.adobe.com/products/premiere/ai-video-editing.html
[25] https://www.avid.com/products/media-composer-scriptsync-ai-option
[26] https://firefly.adobe.com
[27] Malleson, Charles et al. 2015. 'FaceDirector: Continuous Control of Facial Performance in Video'. *2015 IEEE International Conference on Computer Vision* (ICCV), pp.3979-3987. Institute of Electrical and Electronics Engineers (IEEE). DOI: https://doi.org/10.1109/ICCV.2015.453
[28] https://podcast.adobe.com/enhance
[29] https://www.respeecher.com/ai-voice-lab
[30] https://www.flawlessai.com/ai-tools#deepeditor
[31] https://deepdub.ai/deepdub-go
[32] https://www.heygen.com/video-translation

programmes but across entire channels[33]. Speech-to-Text GAITs enable single-click subtitling[34]. High quality voice cloning is used by the mainstream film industry, for instance to create the voices of deceased actors, with specialist AI developers delivering trusted services.[35]

1.4.9 Music scores for film and television. GAITs that generate music from text prompts include Udio.com and there are predictions that the human role in the creation of music for screen media will be overtaken by such AI systems.

1.4.10 Visual Effects (VFX) are central to the production value of big budget films and High-End Television (HETV) shows. Large VFX companies have integrated machine learning into their workstreams, enhancing existing creative processes such as the reduction of video 'noise'[36]. Fundamentals of the VFX process, such as rotoscoping, are increasingly performed by AI-powered systems rather than VFX professionals. GAITs integrated into postproduction software packages[37] offer users VFX options, such as changing the weather in a scene.

1.4.11 Animation. The uses of AI in animated film production have proliferated and there is substantial research in this field[38]. Leading animation studios invest heavily in AI research: Disney has funded major research in the field since 2008, in association with academic partners such as the Swiss Federal Institute of Technology in Zurich, focusing on performance capture innovations and creating digital faces[39].

1.4.12 Synthetic Television Presenters. China's state news agency, Xinhua, introduced the first AI news anchor in 2018, an avatar of the human newsreader, Qiu Hao[40]. Several international broadcasters have now introduced synthetic TV presenters, mostly in news and

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[33] Whittock, Jesse. 2024. 'MagellanTV Uses AI To Power Spanish-Language FAST Network On The Roku Channel', *Deadline* https://deadline.com/2024/01/magellantv-ai-fast-channel-roku-documentary-1235700043/

[34] https://www.adobe.com/products/premiere/speech-to-text.html

[35] https://marketplace.respeecher.com

[36] Michael Stein, Chief Technology Office of Framestore, in interview with the author: " What we tend to do is use algorithms for reducing noise, which can be better by using machine learning so we get to that final image quicker."

[37] https://www.adobe.com/uk/products/aftereffects/vfx-visual-effects.html

[38] Including:
Gao, R. (2023). 'AIGC Technology: Reshaping the Future of the Animation Industry'. *Highlights in Science, Engineering and Technology*, *56*, 148-152. https://doi.org/10.54097/hset.v56i.10096
Singh, A. 2023. 'Future of Animated Narrative and the Effects of Ai on Conventional Animation Techniques,' *2023 7th International Conference on Computation System and Information Technology for Sustainable Solutions (CSITSS)*, Bangalore, India, 2023, pp. 1-4, doi: 10.1109/CSITSS60515.2023.10334104.

[39] https://www.reuters.com/technology/disney-creates-task-force-explore-ai-cut-costs-sources-2023-08-08/

[40] https://www.scmp.com/video/china/2175544/meet-real-life-news-presenter-behind-worlds-first-ai-anchor

current affairs[41]. The technologies used vary from systems that deepfake AI-generated faces onto human newsreaders, to wholly synthetic television presenters.

1.5 **Sales, distribution and marketing**.

1.5.1 AI is used to support product placement in audiovisual content. Market leader 'Ryff' claims that its AI 'analyzes any moving image content to provide deep data intelligence about each frame, pin-pointing the emotionally-driven, association-based opportunities to marry brands to content with contextual relevance'[42]. The use of 'Generative Fill' technology now available in postproduction (1.4.6, above) allows advertisers to add posters or branded objects into the background of scenes, a technique that is arriving in film and television following its initial use on social media platforms[43].

1.5.2 Marketing of film and TV content is guided by AI. Neil Sahota comments that, 'AI tools analyze social media data to gauge audience sentiment and preferences, guiding marketing strategies.'[44]

1.6 **Exhibition, Streaming and Broadcast**

1.6.1 In feature film exhibition, AI is used to target film releases to the most appropriate audiences. Tim Richards, CEO of international cinema chain Vue Cinemas, describes how, 'AI is responsible for booking all of our screens and it determines what we play at what cinema on what screen and at what time.'[45] The company spent eight years developing its own AI system that analyses community demographics around each cinema.

1.6.2 AI is used to improve the operation of streaming services. Brazilian media giant Globo Media uses the AI tool, HeadSpin, 'to identify and reduce systemic access failures to video streaming platforms on smart TVs.'[46] It also offers 'an AI-powered virtual assistant chatbot which gives personalized recommendations based on customers' past interactions and products'[47]. Amazon Prime uses AI to track viewers' engagement, identifying the sequences

[41] https://www.theguardian.com/tv-and-radio/2023/oct/20/here-is-the-news-you-cant-stop-us-ai-anchor-zae-in-grants-us-an-interview
[42] https://ryff.com/
[43] https://www.nytimes.com/2024/02/01/business/media/artificial-intelligence-product-placement.html
[44] https://www.forbes.com/sites/neilsahota/2024/03/08/the-ai-takeover-in-cinema-how-movie-studios-use-artificial-intelligence/
[45] https://deadline.com/2024/05/vue-tim-richards-distribution-ai-multiplex-art-house-cinema-1235916929/
[46] Mari, Angelica. 2022. 'Brazilian media giant Globo increases global collaboration with startups', *startups.com.br*
https://startups.com.br/noticias/brazilian-media-giant-globo-increases-global-collaboration-with-startups/
[47] https://www.salesforce.com/resources/customer-stories/grupo-globo/

within its shows that are most appealing to audiences; AI algorithms are used to gauge the attractiveness of the thumbnails for each film or TV show[48].

2. Impact of artificial Intelligence

2.1. Overview & key trend(s)

The pace of development of Generative AI tools (GAITs) in the film and television sector has been extremely rapid, however the location of this innovation is almost entirely in the Global North.

While early deployments of AI were centred on novel means of creating and manipulating film and television content, the trend is now towards using AI to improve and accelerate technical processes, as well as to automate data analysis in areas such as marketing and promotion.

2.2. Opportunities

2.2.1. Main opportunities

Speed. In multiple areas of the film and TV sector, the use of AI to accelerate processes is one of the technology's most significant opportunities. An example is during the conceptualisation and development of movies: American screenwriter Bob Schultz describes how within a few hours of a producer meeting, he can deliver pitches of multiple GPT4--generated storylines to meet their brief[49]. In preproduction, GAITs offer significant time-saving advantages: one industry user of AI tools notes that 'the heart of the AI capabilities are really in the script breakdown. Which is massively beneficial and can save you a ton of time in pre-production.' [50] In film and TV postproduction, leading managers predict the opportunities of AI as an accelerator. Michael Stein, Chief Technology Office of Framestore, comments: 'The majority of where we think AI will impact the business in the near term is to make everything that we do slightly faster [...] What we're really trying to do is to get to the better, more quickly.'[51]

Reduction of costs.
AI has the potential to cut production costs across the film and television value chain. Increased speeds of production processes are an immediate gain, with further examples including:

[48] Sahota, Neil. 2024. 'Streaming Into The Future: How AI Is Reshaping Entertainment', *Forbes*. https://www.forbes.com/sites/neilsahota/2024/03/18/streaming-into-the-future-how-ai-is-reshaping-entertainment/
[49] https://www.bfi.org.uk/sight-and-sound/2023-year-ai
[50] Noam Kroll, https://noamkroll.com/review-testing-filmustages-ai-powered-script-breakdown-app-on-a-feature-film/
[51] Interview with the author

- synthetic newsreaders created using AI provide television companies with a broadcaster whose on-screen presence can be 24/7, without the labour costs of human employees.
- Virtual Production in film and HETV incorporates AI with game engine technology, to enable directors to film their actors in extraordinary environments or locations without leaving the studio. This removes the huge financial costs of cast and crew travelling to remote locations, as well as the carbon costs of such logistics.

Democratising access to advanced filmmaking techniques. Generative AI tools are increasingly able to create spectacular VFX that were previously very expensively produced for high-end film and television.

Small scale uses of AI represent modest opportunities in particular niches of the sector, for instance, the app Rafy[52] that uses AI to help actors prepare for auditions. Despite such niche uses of AI being relevant to only limited parts of the workforce, it is these small improvements for film and television professionals that may collectively have a significant impact.

Unexploited opportunities include fully synthetic filmmaking and television production. Text-to-video GenAI tools enable the creation of films without actors, cameras, studios or crew – this new form of content can be created by a single filmmaker at their computer. This development in AI technology is currently at the experimental stage, with tools such as OpenAI's SORA receiving huge publicity yet not available for general use, unlike its precursor, Runway. Fully AI-produced television programming has been initiated by South Korea's broadcaster, MBC, which made the talent show, *Gone PD* (2024), with production decisions by an AI model, M-Phago[53] including the choice of human contestants.

2.2.2. Requirements or resources needed to access these opportunities

There are four fundamental requirements in accessing the opportunities of AI in the film and television sector:

- Skills
- Computational power and hardware investment.
- Internet infrastructure, connection speeds and reliability.
- Financial capacity to fund recurring expenses: software subscriptions, hardware upgrades.

2.3. Challenges & risks

2.3.1. Main Challenges

Skills development and workforce adaptation

[52] https://rafy.app/
[53] https://koreajoongangdaily.joins.com/news/2024-03-13/entertainment/television/MBCs-AI-variety-show-producer-stupefies-participants-viewers/2001285

AI will lead to job role changes in many areas of film and television: across the industry there will be a requirement to upskill workers in the use of AI tools and the changing practices that these bring.
The shift to highly data-driven business decision-making in some parts of the value chain, especially marketing and distribution, will require expanded skills in the use of AI to analyse data for all staff in this field of work.

Job losses
There has been considerable attention to AI's threat to jobs in the sector. Job losses amongst writers, rotoscope artists, cinema bookers, production schedulers, television journalists, and graphic designers are certain as a result of AI. In the US, the SAG-AFTRA strike responded to an emerging practice by producers of the capturing of background actors' faces for unlimited use in future productions, which would lead to mass job losses in the acting profession. Script analysis GenAI tools are designed to perform many of the roles of the script editor or development executive in film and television drama. The role of the film composer is already being partially displaced by producers using simple GAITs[54]. However, the wholesale replacement of film and television creatives by AI is downplayed by leading industry figures. Film director James Cameron[55] does not believe that AI-generated films will have wide human appeal: 'I just don't personally believe that a disembodied mind that's just regurgitating what other embodied minds have said - about the life they've had, about love, about lying, about fear, about mortality - and just put it all together into a word salad and then regurgitate it, I don't believe that has something that's going to move an audience.'

Intellectual Property
Within a film or television product there is a complex web of IP rights - for writers, actors, directors, composers and others. Generative AI creates legal complications when applied to any of the related creative processes, and these have not been resolved in most jurisdictions. A failure by policymakers to secure creative practitioners' ongoing intellectual property rights in the AI era will destroy the livelihoods of workers in these professions, and introduce a disincentive for future generations which may drain talent from the film and television sector.

Wholly AI-generated creative content introduces further legal challenges. AI-generated scripts, for instance, are not copyright protectable in many territories including the US[56], while some jurisdictions have opened the possibility that AI-generated art works are copyrightable, including

[54] See comments by influential film composer Michael Price: https://x.com/michael__price/status/1782381126750699520
[55] Celebretainment. 2023. 'James Cameron plays down film industry's AI fears.' *The Times - Tribune*. Jul 20 2023/07/20/. Available from: https://www.proquest.com/newspapers/james-cameron-plays-down-film-industrys-ai-fears/docview/2839947809/se-2.
[56] https://variety.com/vip/generative-ai-isnt-off-limits-for-writers-and-studios-what-now-1235862716/

China[57]. Film composer Michael Price argues that 'the copyright position of AI-generated music is one of the biggest barriers to it being used in more productions'[58].

LLMs themselves breach copyright under the law of many jurisdictions[59], in cases where they are built on foundation models that use training data scraped without consent from the internet.

Ethical issues and the misuse of AI

The relationship between the creators of films and television programmes and their audiences could be disrupted by AI. In the field of documentary production, major issues have emerged when filmmakers have used GenAI without disclosing their use of the technology, leading to damage to audiences' trust in the content that they are viewing and in their confidence in the makers of these programmes. Controversies have centred[60][61].

Professional standards within all creative sectors of film and television are put into question when Generative AI is used to create text, video and audio content for audiences. Organisations representing professionals within the sector have issued statements and guidelines to their members regarding AI, including international bodies such as the Radio Television Digital News Association (RTDNA)[62] and the International Federation of Actors (FIA)[63].

2.3.2. Remedies or solutions to mitigate these challenges

A combination of industry and governmental action is required in response to the challenges of AI in film and television.

Issues of intellectual property can only be resolved through legislation and international agreements.

The need for upskilling and training of the workforce and management must be a collaboration between industry and the public education sector.

The film and television industry itself, alongside the trade and labour organisations within it, can resolve issues of employment, job losses, investment and standards.

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[57] *Li v Liu*; *Re Spring Breeze Has Brought Tenderness* (case number (2023) Jing 0491 Min Chu No. 11279), cf https://natlawreview.com/article/computer-love-beijing-court-finds-ai-generated-image-copyrightable-split-united

[58] https://x.com/michael__price/status/1782381132220178926
'...the copyright position of AI-generated music is one of the biggest barriers to it being used in more productions, now's the time to join your local rights organisations and know how all that works - @PRSforMusic & @IvorsAcademy do great work'.

[59] Legal cases ongoing in the USA include Kadrey v. Meta Platforms and Tremblay v. OpenAI.

[60] Rosner, Helen. 2021. 'The Ethics of a Deepfake Anthony Bourdain Voice', *The New Yorker* online July 17 2021. Available at https://www.newyorker.com/culture/annals-of-gastronomy/the-ethics-of-a-deepfake-anthony-bourdain-voice

[61] https://www.404media.co/netflix-doc-what-jennifer-did-uses-ai-images-to-create-false-historical-record/

[62] https://www.rtdna.org/use-of-ai-in-journalism

[63] https://fia-actors.com/2023/11/23/fia-policy-and-practical-guide-with-respect-to-artificial-intelligence/

Cross-industry agreement on the ethical use of AI by film and television creatives is required. An understanding of the requirements of 'Responsible AI' is necessary across the sector, to ensure that the adoption of AI-driven processes is undertaken with careful consideration of their consequences.
AI developers themselves can adopt an ethical approach to their innovations. One example is the company, Flawless AI, which works in AI and revoicing. The company's GAIT, DeepEditor[64]demonstrates the integration of ethical procedures into an AI-based workflow, ensuring that the actor whose performance has been recorded retains control of how their voice is re-engineered by AI in postproduction.

2.4. Focus on impact specific in regions or countries outside the Global North (eg. Africa, Middle East, Asia/South Asia/South America)

The upsurge of development activity in Generative AI for the film and television sector is occurring almost exclusively in the Global North. This does not mean that the tools being developed are less relevant to the film and TV industry in the Global South, however they are offered to the market with assumptions about users' access to key fundamentals such as computing power and internet speed.

There are significant deficiencies in how some new AI systems function in relation to the cultures of the Global South. Closed captions[65], for instance, are a legal requirement imposed on many broadcasters, in order to promote accessibility for hearing-impaired audiences. LLMs used to create closed captioning for television have been found to be less effective for languages outside the Global North. Research has analysed the deficiencies of these AI systems in creating closed captions in Arabic[66].

Television stations in Asia lead the world in the adoption of AI-generated newscasters, a use of the technology that began in 2018 in China[67]. While in Europe only Greece has introduced an

[64] https://www.flawlessai.com/ai-tools#deepeditor
[65] 'Closed captions' are a same-language text version of the audio dialogue heard in a scene, presented on screen in the same way as translation subtitles.
[66] Wala' Mohammad Akasheh et al. 2023. 'Artificial intelligence-generated Arabic subtitles: insights from Veed.io's automatic speech recognition system of Jordanian Arabic', *Texto Livre linguagem e tecnologia* DOI: 10.1590/1983-3652.2024.46952

[67] https://www.theguardian.com/world/2018/nov/09/worlds-first-ai-news-anchor-unveiled-in-china

AI news anchor[68], they are already in operation in Bangladesh[69], India[70], and Thailand[71]. In the Middle East, Kuwait[72] is another television culture that has adopted this use of AI. In 2024, the International New Media Association (INMA) introduced an award for 'AI-led Newsroom Transformation', which was won by Sana, an AI-generated news anchor[73] created by the India Today Group.

The capacity of countries in the Global South to upskill workforces to use Generative AI in filmmaking and television is thrown into doubt by some countries' educational cultures that neglect foundational training that is essential as a precursor to advanced knowledge of AI in the creative industries. Kenyan VFX artist Yvonne Muinde has described how the lack of foundational art education provision in her country's schools means that the ability of local workers to successfully use advanced AI tools in image generation is undermined[74]. Uneven levels of management knowledge, and attitudes to AI, is a problem in some countries. Despite some areas of innovation in China, Chulei Zhang argues that an impediment to progress comes from the fact that 'the current Chinese film and television market is still dominated by seniors with higher qualifications and rich experience, and they have become accustomed to the past film and television production styles and models'[75].

Where large media organisations in the Global South engage in competition with Western TV streamers, they work very effectively with new opportunities afforded by AI. We have seen (1.6.2, above) how Globo Media in Brazil is a pioneer in the use of AI to support customer engagement in its television streaming services.

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[68] https://greekherald.com.au/news/greece-introduces-first-artificial-intelligence-news-presenter/#:~:text=Greece's%20public%20broadcaster%20ERT%20has,on%20ERT's%20popular%20Syndesis%20program

[69] Tribune Desk. 2023. 'Aparajita: Bangladesh's first AI news anchor on Channel 24', *Dhaka Tribune* https://www.dhakatribune.com/bangladesh/320677/aparajita-bangladesh-s-first-ai-news-anchor-on

[70] India Today Video Desk. 2023.'Kalli Purie launches India Today's five new AI Anchors' *India Today* *https://www.indiatoday.in/india/video/kalli-purie-launches-india-today-groups-5-new-ai-anchors-2445161-2023-10-05*

[71] https://efe.com/en/other-news/2024-04-01/thailands-first-ai-presenter-debuts-on-national-tv/

[72] No Author. 2023. 'AI-generated news presenter appears in Kuwait.'*Aljazeera* https://www.aljazeera.com/news/2023/4/10/ai-generated-news-presenter-appears-in-kuwait

[73] Abbas, Ajmal. 2024. 'India Today Group's AI anchor Sana wins global media award', *India Today* https://www.indiatoday.in/india/story/india-today-groups-ai-anchor-sana-wins-global-media-award-for-ai-led-newsroom-transformation-2532514-2024-04-27

[74] 'Yvonne Muinde: Painting with AI'. *The Last Human Voice Podcast*, https://www.deezer.com/en/show/1000298361

[75] C. Zhang and K. M R. 2023. "Deep Learning Technology in Film and Television Post-Production," *IEEE International Conference on Integrated Circuits and Communication Systems (ICICACS)*, Raichur, India, 2023, pp. 1-5, doi: 10.1109/ICICACS57338.2023.10100148

In other areas of AI, companies in the Global South are slower to adopt innovations. The large and very successful animation studio in South Africa, Triggerfish, has a wait-and-see position on the use of AI in computer animation production.

3. Critical analysis

AI developers have been very active in building new Generative AI Tools (GAITs) that are useful to the creative, organisational and business operations of the film and television sector. Many of these have the capacity for positive impact. However, most GAITs are being created by AI developers who themselves have little knowledge of the film and television sector, an external perspective that has created some major failures in new AI tools. To guarantee more successful uses of AI in film and television will require the development of GAITs within the sector - the 'Creator of AI' mode of engagement. Among the more successful examples of such AI innovation is Vue Cinemas' development of its own AI-powered system of film bookings (1.6.1, above). The significant impact of this tool is derived from its creation by a film industry business, creatively responding to its own needs, not by an external AI developer. The 'Creator of AI' mode is seen also in large broadcasting corporations in the Global North, which now have dedicated R+D teams[76] working to create GAITs that will support television programme-makers. It is not yet clear whether these advances will be shared with less well-funded broadcasters in the Global South. Consideration of the Asilomar Principles on AI (2017) should be applied to the film and television sector: 'The economic prosperity created by AI should be shared broadly, to benefit all of humanity.'[77]

WEAKNESSES OF AI

Since the public release of LLMs, chiefly the ChatGPT and other models, expectations have been high about the quality of text generated by AI. The dispute over AI in the Writers Guild of America strike in 2023 demonstrated fears that AI could create work of such quality that it would replace human creative labour. However, the weakness of Chatbots is that they are only designed to generate *plausible* text, so are inadequate in matching human originality and creativity. Experiments in the use of LLMs to generate complete screenplays have produced unsatisfactory and generic outputs.[78] Already, professional writers are clear that AI has a role limited to the early stages of script development and is not useful in the final drafting of scenes, which require human creativity.

There is a parallel here with the weaknesses of text-to-image and text-to-video AI tools. After a short period of public exposure to the results of these GAITs, it is already possible to identify an aesthetic conformity in AI-generated images. It is not yet clear whether this will be accepted as a new visual style in moving image cultures, or whether audiences will tire of the 'AI look'.

[76] https://www.bbc.co.uk/rd/projects/intelligent-video-production-tools
[77] Principle 15, https://futureoflife.org/open-letter/ai-principles/
[78] The problem here may be linked to the limitations in the design of LLMs, such as token limits.

It is likely that the main creative benefits of AI in film and television may be reaped by the next generation of film and TV professionals. Michael Stein, tech innovator and CFO of Framestore, believes that 'alot of the new AI-based technologies in visual effects are actually targeted at a whole new generation of content creators.'

The mathematical basis of AI, and the data-focused approach of AI developers, mean that some attempts to broaden the creative applications of AI in film and TV will fail. For instance, GAITs that offer support for casting in dramas claim that decisions about the perfect actor for a film role can be undertaken by AI. Although AI can sift large datasets of available actors in the market, potentially identifying the required age, look, or previous commercial status of performers, it cannot replace essential qualities of human relations that lead to good casting and on-screen performance. Great film performances are based on the creative chemistry between actors and directors, and AI-powered data analysis cannot replace this.

AI AND THE AUDIENCE

A current trend in television production is to foreground AI in programming, a strategy of capitalising on public fascination with artificial intelligence. This tends to create short term gimmicks that generate press and audience interest, but such content has not proved sustainably popular. Examples include the South Korean variety show, *Gone PD*, which was conceived and promoted as a TV programme produced by AI, and the UK pastiche of mockumentary, *Deep Fake Neighbour Wars* (ITVX), which used machine learning to swap the faces of celebrities onto actors. Neither of these shows has generated sustained and growing audiences. As the novelty of AI in the public consciousness wanes, it is likely that such programming will reduce and the deployment of AI will more frequently be in behind-the-scenes functions rather than being promoted as the main feature of content.

Despite the AI community's work to harness the technology for creative purposes, the most significant usefulness of AI in film and television will be in market analytics. The use of AI to deliver highly detailed understanding of audiences and their response to screen content will be one of the most important contributions of the technology in the sector.