Research Article

Challenges of Content Production Using Large-scale Artificial Intelligence Tools

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Abstract

Content production with artificial intelligence in the not-too-distant future can reach good maturity and meet the needs of small and medium-sized businesses. Broadcasters, as the largest content producer and publisher in the country, as well as other creative content producers, need to make arrangements, especially in the areas of vision, organizational culture, processes, staff capabilities, and their systems and tools. Know the production strategy by artificial intelligence, which is discussed in this article.

Keywords: Content Production; Artificial Intelligence; Broadcasters; Deepfake; Neural Networks

Abbreviations

AI: Artificial Intelligence; ANN: Artificial Neural Networks; AIDA: Awareness, Interest, Desire, and Action; PAS: Problem Agitate Solve

Introduction

Technological advances, on the one hand, eliminate or diminish previous job opportunities and abilities, and on the other hand, create new job opportunities (or at least lead to the promotion and improvement of old jobs) and the need for new abilities, which can happen directly or indirectly. Production technologies based on the use of artificial intelligence are now more developed for small businesses, cyberspace, or occasionally in professional production, and yet advances in this area are not so significant that they are widely used in the broadcaster. The production of artificial intelligence in the field of text is more than other content fields such as audio and video. Also, perhaps the only area where artificial intelligence in textual content production has not yet been able to touch well is the field of creativity. Creativity in writing is a level beyond writing standard texts. It is expected that with the development of knowledge and technology of artificial intelligence, computational intelligence, and soft computing, the

world will see the increasing influence of this technology, even in the field of creativity. DALL.E [1] (version of GPT-3 [2] with 12 billion parameters) One of the newest OpenAI neural networks [3] that converts descriptive texts into images, which has somehow entered the creative simulation! This model can produce creative composite images in a few words. The images produced by this AI machine include various types of paintings, objects, and even real images. The GPT-3 model can be used to produce fake news also.

Companies such as Microsoft invest $ 1 billion in OpenAI to develop new technologies for the Azure cloud platform, promises to expand the capabilities of large-scale artificial intelligence. The OpenAI supercomputer includes more than 285,000 CPUs, 10,000 graphics cards, and 400 Gbps connectivity, the world's fifth most powerful machine [4], with 38.7 to 100.7 quadrillion (10 to 15 power) capabilities in operation. Every second) [5].

Although production by artificial intelligence is less advanced, especially in areas that require creativity, considering the significant differences in the Persian language and the limitations created, doubles the need for careful planning and investment in this area. Today, most content production platforms do not support the Persian language by artificial intelligence. Today, AI engines

can provide output even based on popular advertising models such as AIDA and PAS and brainstorming ideas. In the PAS method, the content production specialist (who today can replace artificial intelligence in non-Persian languages) tries to first highlight the problem of his audience by using the magic of words. It then presents the product or service of its intended business as a solution. The AIDA the model helps to divide user behavior into separate parts (awareness, interest, desire, and action). A brand will then be able to plan marketing and advertising strategies to influence each segment so that the consumer is forced to engage with the brand and eventually the product is sold. Below these two models is to demonstrate the power of content-generating AI machines, how advanced they are. Some of the improvements in this field can be seen on the websites https://www.copy.ai/, https://copypro.ai/, and https://www.jarvis.ai/, which are filtered and sanctioned by The side of foreign companies is a sign of its importance and the context of great challenges in the field of using artificial intelligence to produce content.

In the field of sound production by artificial intelligence, we can mention the Jukebox algorithm, which was able to produce music with the help of learning models. Of course, like previous AI experiences, these songs are still not artistically significant, but they are a huge technological breakthrough. Artificial Intelligence [6] The Jukebox uses the deep MuseNet network [7] to try to achieve a statistical and mathematical approach that can engage our emotions. Methods such as LakhNES [8], WaveNet [9], Parallel WaveNet [10], MiDI-VAE [11], Gansynth [12], Samplernn [13], Midinet [14] and MelNet [15] Some successful production activities Music is by artificial intelligence.

Another creative AI product is a content automation tool called Wordsmith [16]. Wordsmith is a natural language production platform that can turn data into enlightening and intelligent narratives. Technology giants like Yahoo, Microsoft, Tableau use WordSmith to produce about 1.5 billion pieces of content each year.

Activities have been started to use artificial intelligence to produce Persian content in the country [17-19]. These activities try to produce content using neural networks, deep learning, and transitional learning, and machine learning, but due to the lack of a comprehensive and complete basic knowledge base in Persian, they face many problems to get the right result. The content produced by these systems, after being edited by users and receiving feedback,

makes them more complete and intelligent. Artificial intelligence is also widely used in summarizing long texts. Such an approach requires the algorithm to understand the source text. Then, the meaning and important details of the text are presented in a clear and understandable summary.

The content industry with large-scale artificial intelligence

From the technical point of view, large models perform better than their predecessors, and Self-monitoring capability gets benefits; That is, they can create labels by examining the relationships between different parts of the data. Large-scale artificial intelligence is expected to perform very well with the ability to understand the nuances of language, grammar, knowledge, concepts, contexts, summaries, parsers, and even coders. Microsoft uses its Turing models to enhance language comprehension in Bing (in captioning and answering questions), Office software (in further development of Smart Lookup and Key Insights), Outlook (for suggested answers), Dynamics 365 Sales Has used Insights (rushing to help vendors to anticipate appropriate arrangements based on past customer interactions) and other products.

Large-scale artificial intelligence, as opposed to algorithms, Supervised learning; Various applications in various sectors including industries, companies, and specific topics, natural language processing, and computer vision have. Teams working on [3] OpenAI (with a $ 1 billion investment from Microsoft that will be spent by 2025) conducting tests to review the upgrade AI capabilities with huge amounts of data, we teach algorithms that use huge computational resources. If artificial intelligence is used in close collaboration with researchers in related fields such as the social sciences, it will pave the way for major challenges in healthcare, climate change, and education, which it is hoped will eventually enable the implementation of an AI model. Create as much as the human brain.

Today, advances in the training of artificial intelligence models are such that every 3.5 months, the ability doubles that this level of performance exceeds expectations of Moore's law. Recently, IBM and NVIDIA details Released the neural computer, which represents the use of a computer of hundreds of chips for Artificial intelligence and server training has 5 petaflops based on an A100 Tensor Core graphics card. On the other hand, the amount of calculations required for training Artificial intelligence models Since 2012, has "doubled" once every 16 months. This reduction in the need

for processing resources and the achievement of high artificial intelligence efficiencies in some areas promise a promising future. the door Google cloud platform, The OpenAI Five system defeated professional Dota 2 players with a 256 Nvidia Tesla P100 graphics card and 128,000 processor cores [20]; It took 180 years to play. Google recently introduced a system with 64 Nvidia V100 graphics cards and 32 processor cores to solve the Rubik's Cube with a robotic hand. Of course, it should be noted that the success rate was relatively low.

The use of large-scale artificial intelligence is very effective in the performance of intelligent systems and reducing the costs of required processing resources [21]. DeepSpeed for example, is [22], an artificial intelligence library [23] for Facebook's PyTorch machine learning framework that teaches models up to 10 times faster with the same infrastructure [24-29]. The training distributed in ONYX [30], if used with DeepSpeed, provides this capability to the models to increase the performance level up to 17 times. Building better computers, better-distributed systems, better networks, and better data centers will help improve the performance and flexibility of large-scale artificial intelligence and lead to cost savings.

Developing the cinema industry with artificial intelligence

Today, the film industry, which had previously outsourced competition to video streaming on the Internet, is using artificial intelligence to make up for this backwardness and improve, especially in the areas of marketing and production. Many film studios around the world are now experiencing the use of artificial intelligence. "Personalization" is one of the applications of artificial intelligence in the film and cinema market, which by analyzing and collecting information about the type of decision-making and customer behavior, produces appropriate content for the user and provides it to him specifically. The first step in this process is "personalized advertising"; Those movie ads that are sent to the user on movie and video streaming channels are sent to him personally and only because the artificial intelligence has detected that this particular user is enjoying the movie.

Today, artificial intelligence is expanding into applications in dubbing, face-shift technology, deepfake, and professional content production in the film and film industry. The face of one of the most famous examples of mobility technology can be considered Rogue

One: A Star Wars Story 2016 [31]; In this film, they used face shifting technology and video composition to recreate the character of Grand Moff Tarkin; A young version of Princess Leia is also included in the film. As technology advances, we will see a large number of digitally dead people appear in movies and commercials. Other uses for artificial intelligence in video production include improving video conferencing, real-life conversations with historical figures, or personalizing audio files.

One of the successes of content production by artificial intelligence in the film and film industry is that Sonantic software company [32] Voice of Val Kilmer (Top Gun movie's ice man) whose power of speech due to laryngeal cancer and tracheostomy surgery (tracheal incision)) Was severely damaged, simulated by artificial intelligence technology and using the recorded voices of the 61-year-old American actor. Flawless [33] also uses Deepick technology to synchronize the actors' lips with the target dubbing language. Flawless software TrueSync of the means of production videos Deep Fick to manipulate and set the faces of the actors in the film parasites (Parasite) [34], movies Korean Academy Award in 2019, used to mouth movements and facial muscles they target language adaptation of a much larger; So if a film is made in English, for example, and the audience in Berlin watches it in German, using this technology, all the actors seem to speak German.

Start-up Cinelytic [35]. In Los Angeles, claims that artificial intelligence could be a wise producer. The startup collects historical film data from previous years, then cross-references information about the film's themes and major cinema talents, and discovers hidden patterns in the data by machine learning. Cinelytic software has created something like a football simulation in the movie world. In this way, the user can select a team player, then replace one player with another player to see what effect the change on the anticipated will have a movie box office.

The Belgian company ScriptBook [36] claims that its algorithm can only estimate the success of a film by analyzing the script. Startup Vault [37] promises its customers that based on how they view movie trailers on online platforms, it will anticipate demographic groups interested in the movie. Another company, Pilot [38], can predict sales revenue with unparalleled accuracy 18 months before the film is released.

The evolution of the use of digital technology in the creation of actors can be traced back to the 2014 film Furious 7 [39] after the

sudden death of Paul William Walker IV. The makers of the fast-paced movie 7 added a lot of information about how Paul Walker walks and reacts naturally to their computers, and was surprised to find that the AI created from this information has a very high ability to show a human's natural activities. has it. During the production of Paul Walker in the film, simulation technologies and artificial intelligence were used extensively by the filmmakers, and the result was an acceptable work.

In the future, it can be expected that the AIs designed by the creators will not only be involved in the three-dimensionality and payment of the characters but will even be able to enter the field of filmmaking as screenwriters, editors, and even film actors. Similar examples of acting in the real world by artificial intelligence can be seen in the stories of films and series such as Westworld [40] and Blade Runner [41]. Man Irish [42] of the great actors such as Robert De Niro and Al Pacino film history and atmosphere that patch of age are living in different decades using digital effects Rejuvenation has benefited. Artificial intelligence technology can reduce filmmaking costs, film production time, and cast costs. It is predicted that by 2045, humans will no longer be TV presenters. Artificial intelligence becomes so powerful and intelligent.

Challenges of broadcasters in artificial intelligence

The purpose of this section is to describe the capabilities and challenges of establishing production platforms by artificial intelligence in Broadcasters and to explain the concept of structure and content production systems using this technology. The establishment of production platforms by artificial intelligence and finally production by it requires the use of internal specialized forces. Experience in markets such as Germany, India, Lebanon [43], Canada, and China that use machine learning technology to generally focus on animation production in the cultural and entertainment fields, as well as new media that are immersive in making physical games. And online, merchandise production, amusement parks, and other areas of technology and entertainment have been invested simultaneously and content-richly, it can help map the future of broadcaster and content-based markets with artificial intelligence.

The priorities of the AI platform are considered by Broadcasters (API-based system for service management) and the areas of video production, animation, as well as character and environment design, which is accompanied by the production of content related

to each module at professional and Broadcast level. Modules related to music, audio, and editing are given lower priority.

One of the best ways to manage the deployment of new production platforms and systems, especially artificial intelligence, virtual reality, and augmented reality, is the systematic evaluation strategy based on the quality of production output. The role of the system in reducing production costs. Using artificial intelligence in addition to all the benefits such as the possibility of employing domestic and international actors (without current restrictions) by changing the design or creating completely artificial characters or using the presence of great artists who are no longer with us or inside the country is uninhabited, leading to reduced production costs. It is estimated that artificial intelligence can reduce production costs by more than 20%. Meanwhile, platform, data, infrastructure, and training costs for artificial intelligence are depreciated in several start-up projects.

Content production seeks new ways based on artificial intelligence, machine learning, interactive learning, and deep learning to produce content and personalized products based on the needs and analysis of the audience or user in one-way media such as cinema and television and VOD and multimedia media such as messaging, social networks And interactive TVs. The rapid growth of data-driven technologies and user behavior raises the expectation that artificial intelligence will revolutionize not only content production technology but all segments of the media industry, so it needs to be balanced as it advances in content production. In the field of production, the following points should be seriously considered: We are currently facing robots that create or republish their comments in cyberspace, especially on Twitter. Currently, statistics on the number of these robots in the production of a carousel indicate that the trends are fake and unreliable. While now and soon we will see journalism or tweeting robots that analyze data, past experiences, local and global with high accuracy and productivity and provide worthy and important content. Such robots are expected to quickly overtake humans in the production of sports score content, stock market news, and weather forecasting.

Sophisticated natural language processing methods such as content classification, texture extraction, and content mode analysis, and machine translation can also help to produce rich content that is used to produce valuable content. These intelligent

agents will advance to the point where, like humans, they will express their views on any subject, especially on the reflection of political events, while these robots have the potential to go far beyond human capabilities and lead to greater social admiration and influence. From the properties of society.

The production of luxury content by artificial intelligence and the creation of a user base for such products implicitly identify and value the production of artificial intelligence-based robots in other media spaces, especially cyberspace, which is necessary for the balanced portfolio of Broadcasters. Feedback on products based on artificial intelligence should be done carefully enough and it is suggested that at the same time and as the use of by-products and complementary to the content production project by artificial intelligence as follows:

- Master plan for creating, training, and exploiting Persian text writing robots

- The system of management, testing, and health certification of the author's intelligent agents in specialized fields should be prepared and made available to everyone. In this system, a central broker, based on standard tests as well as intelligent agent outputs, rates and verifies its health and identity value, and makes the results available to the public as the digital signature of artificial persons through appropriate means. These intelligent agents will be able to provide personalized explanations about the impact of social and political events on the individual's position, business, and family, based on user information and behavior, as well as the assets and priorities of each individual and legal entity. The presentation of the analysis of events, including political, social, war, and election events in which Broadcasters currently play a major role and are the most trusted medium from the point of view of the audience of these analyzes, will be transferred to analytical robots soon.

- It is necessary to create secure databases and news for the activities of smart analyst agents in the fastest time. In this action, by managing social, political, cultural, economic data, as well as data on user behavior and audience taste, an accurate, secure, and structured database of news is produced so that by managing this news correctly, intelligent analyst agents can be analyzed correctly, accurately and He quickly led according to the overall goals of the Broadcasters.

In addition to the artificial intelligence algorithms that generate content, intelligent conductors must also be considered to deliver that content to users. Intelligent scheduling management enables Broadcasters to deliver production content to the user or audience at the right time and media.

- The effectiveness of content may depend more on how it is presented than on how it is produced, how it is presented, and when it is presented in the media. Collecting content with artificial intelligence is very important in the future of broadcasters to make it easier to find relevant and quality content for targeted sections of society. Conductor intelligence helps content that is engaging and compelling enough to turn Broadcast audiences into loyal users. Understanding Broadcasters' Audience and User The main goal of Conductor Intelligence is to provide content producers with information to identify the type of content for a particular audience and even the type of concerns that Broadcasters need to address. Such information is needed to produce smarter, more interactive content and increase the influence and impact of a broadcaster. Artificial intelligence can help increase content and quality standards by creating competition between the content field of view and the loyalty of audiences and users.

- The use of artificial intelligence in increasing the quality of content standards leads to an increase in the demand for healthy and creative content production in Broadcasters. The continuous production of content by various networks and channels of Broadcasters with incredible volume requires the creativity and attention of the audience and users. Intelligent natural language processing algorithms can identify words and phrases expressed in broadcasters in the past and intersect them with words and phrases used in social networks and messengers, to intelligently guide audiences and users to the productions of broadcasters and make them more effective. help.

- This system recommends some words and phrases in the content production texts that Broadcasters content producers can use to increase the likelihood of audience interaction. Artificial intelligence is excellent at extracting these words and phrases and recommending them to be

used in content production, and by using this intelligent recommender system, it can produce convincing content. This system with access to a large volume of words, phrases, and dialogues, in addition to preserving the Persian language, will help to create more fluent, eloquent, more natural, more frequent, more effective, and simpler texts in the productions of Broadcasters.

- Optimizing content production workflows through the use of artificial intelligence

- Creating an intelligent engine for automatic production of content from Broadcast archives and the content market

- Intelligent recommender system for selecting content for content production based on the inventory of content produced in Broadcasts, macro plans, contact information, and social network data by audience spectrum and the content goals matrix of each Broadcast network.

- Creating an intelligent engine to analyze, modify, edit and repair content, sometimes created by artificial intelligence characters, is another suggested activity for using artificial intelligence in the production of content by broadcasters.

Therefore, it is recommended to carry out the following projects in broadcasters to make the most of artificial intelligence technology and to adapt to the forthcoming revolutions in the field of film and cinema and content production:

- Creating, training, and exploiting intelligent agents Persian text writer

- Digital signature system of artificial persons

- Database master plan, user behavior, and news to guide smart analytics agents

- Broadcaster Content Conductor Intelligent Master Plan

- Smart plan to increase the quality of content standards to increase the demand for healthy and creative content production in Broadcasts

- Intelligent words and phrases in Broadcast productions

- Strategic studies on how to optimize content production workflows through the use of artificial intelligence

- Intelligent plan for automatic production of content from Broadcast archives

- Design of intelligent advisor system for content production

- Intelligent engine design, content analysis, modification, editing, and repair.

Conclusion

AI shortly will reach a good maturity in the field of professional content production and directing businesses in the film and film industry. Broadcasters need to implement the schemes proposed in this article to provide the conditions for compatibility and maximum use of this technology and its by-products. This paper also addresses the tactical challenges and strategic capabilities of production by large-scale artificial intelligence tools that are very effective in the performance of digital systems and reduce the cost of processing resources required. The use of large models and self-monitoring capabilities that create labels by examining the relationships between different parts of the data, is emphasized by this article and the world's largest technology companies in the field of producing artificial intelligence content in the dimensions of the text, audio, and video.

Conflict of Interest

The authors don't have any conflict of interest in this work.

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