ROLE OF ARTIFICIAL INTELLIGENCE IN CONTENT GENERATION

El papel de la inteligencia artificial en la generación de contenido

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Abstract

Artificial intelligence generated content is on the way to solving the problem of the high cost and labor of workflows by producing coherent, human-like text and graphics, leveraging machine learning models to automate content creation, and enhancing efficiency and scalability. However, ethical concerns, community biases, and misinformation risks necessitate robust guidelines and oversight. Anticipated advances include lowering the entry threshold to generate qualitative content, which underscores the need for responsible governance of services and instruments based on Artificial Intelligence. This article reviews certain existing Artificial Intelligence-based tools that generate different types of content and highlights the ethical and social challenges of their responsible use.

Keywords: Artificial intelligence generated content, machine learning, content creation, ethical implications, generative models, personalization, content optimization, GPT, NLP.

Introduction

In recent years, advancements in the artificial intelligence (AI) field have allowed the technologies to perform more complex tasks than before, such as understanding input data and subsequently generating content. Content created by artificial intelligence (AI-Generated Content, or AIGC) represents a new method of content production that complements traditional approaches, such as professional generated content (PGC) and user generated content (UGC) (Tu et al., 2020; Wyrwoll, 2014).

In the modern digital world, content has become one of the primary resources across various industries, with the main goal of enabling sales: sell a product, promote yourself as an author, or create a marketing campaign with a new product to introduce it to a multi-million audience. The content that is designed to be sold must also be informative, instructive, and somewhat entertaining. However, traditional methods of content creation are often labor-intensive and costly. With the development of artificial intelligence technologies, the possibility of partially automating this process arises, significantly improving efficiency and reducing expenses. The field of artificial intelligence has transformed the way businesses, the education field, and anyone else creates content and interact with information.

The primary goal of using artificial intelligence technologies for content generation is to enhance the efficiency and increase accessibility of the content creation process. The core algorithm behind any AI-based content generation tool involves extracting the information from instructions provided by a human and understanding those instructions.

Among the most common applications of artificial intelligence are the generation of text, images, audio and video, content optimization, predictive analytics, and machine translation. The integration of AI into the content creation process opens new horizons for innovation, enabling the development of creative solutions that were previously unattainable. This article explores the potential of AI in content generation, analyzing its benefits and its impact on content creation processes.

As Rahul (2024) notes, the significance of machine learning models in the content creation process lies in their ability to leverage large datasets and complex algorithms to produce high-quality content that resonates with the target audience. For example, generative pre-trained transformers (GPT) can generate coherent text that mimics human writing, while natural language processing (NLP) models optimize existing content for better performance in search engines. This has led to significant improvements in content strategy, audience engagement, and return on investment, making machine learning an indispensable tool for content creation in today's world (Spreadbot, 2024).

The widespread availability of such tools has significantly lowered the entry barrier for creating high-quality content accessible to a broad audience. However, despite their advantages, the integration of machine learning models into content creation has not come without controversy. As Oliinyk (2024) states, there are several things that pose substantial challenges to the responsible use of these technologies, for example: ethical issues related to biases in AI outputs, the potential spread of misinformation, and the loss of human creative potential. As AI-generated content becomes increasingly prevalent, the whole industry is under increased attention, questioning the accuracy and reliability of the content, as well as the ethical implications of automated systems. This situation highlights the need for developing guiding principles and best practices to mitigate these risks.

The integration of machine learning into content creation is expected to continue evolving, with trends indicating a move toward hyper-personalized content delivery (Liz, 2023). However, this particular evolution of the content creation industry requires constant attention, raising important questions about ethical standards and regulatory frameworks to ensure the responsible deployment of artificial intelligence technologies in the content creation process.

Concept of artificial intelligence and its role in content

Definition of Artificial Intelligence

According to Russell and Norvig (2010), artificial intelligence is the study and development of computer systems capable of mimicking human intelligent behavior. Historically, the concept of artificial intelligence has been formulated through various definitions. Figure 1 presents eight definitions of AI arranged in a two-dimensional table. The definitions in the top row relate to processes of thinking and reasoning, whereas those at the bottom relate to behavior. On the left, the definitions measure success based on the accuracy of replicating human actions, while those on the right assess success according to an ideal efficiency metric, which essentially corresponds to the "rationality" of actions. A system is considered rational if it does "the right things," taking into account what it knows.

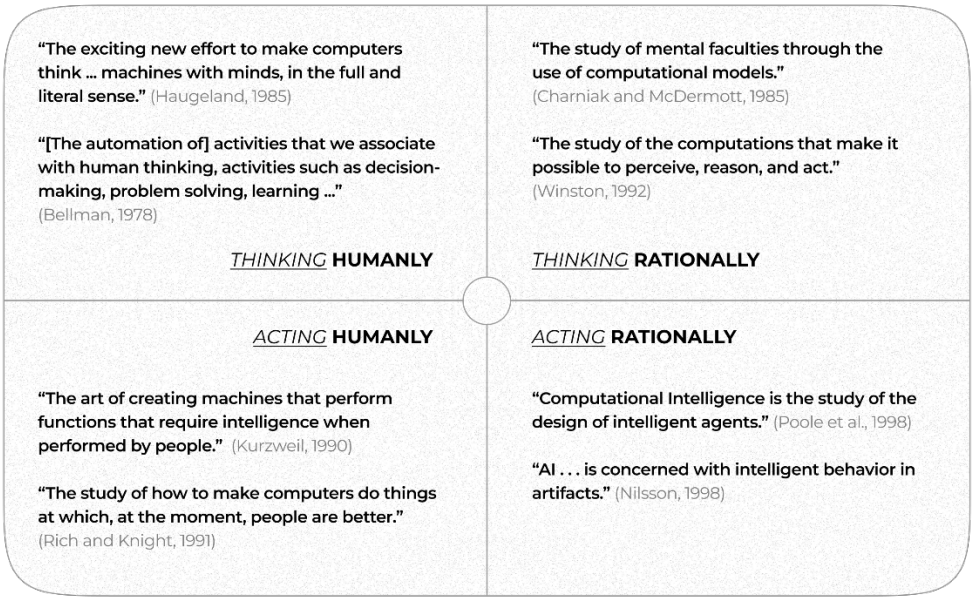

Figure 1. Several definitions of AI grouped into four categories.
Source: Own elaboration.

A widely accepted definition of artificial intelligence states that AI is a branch of computer science dedicated to creating systems capable of performing tasks that traditionally require human intelligence. These tasks include natural language recognition and processing, visual perception, decision-making, and learning from experience and available information. Ranging from simple algorithmic models to complex neural networks, AI employs a variety of techniques for data analysis and interpretation. Machine learning, deep learning, and big data processing are fundamental methods that enable the development of intelligent systems, which can adapt to different conditions and improve their performance and efficiency over time.

A key feature of artificial intelligence systems is their ability to learn independently, enabling them to identify patterns and dependencies within large volumes of data. This already makes AI-based tools hardly replaceable across many fields, including content creation. Through extensive iterations of training on vast datasets, AI can generate text, images, videos, and other forms of media content that resemble human-produced material. This opens new horizons for automating creative processes, while also raising important questions concerning the quality, originality, and ethical considerations involved in employing such technologies.

Main Directions for Artificial Intelligence Development in Content Creation Area

The development of artificial intelligence in the field of content creation encompasses several key directions, each aimed at enhancing different aspects of information generation and processing. Below are the main features.

Text Generation and Natural Language Processing (NLP)

Text generation and natural language processing is a branch of AI technologies focused on creating textual content, such as articles, news reports, blog articles, marketing materials, and even pieces of literature. In the realm of AI-driven text generation, several leading models demonstrate high coherence, logical consistency, and the ability to produce high-quality content. Below is an overview of the most popular ones; however, it is important to note that this list is not exhaustive, as the AI field is continually expanding (The order presented does not imply ranking or specific preferences among these models).

The GPT (Generative Pre-trained Transformer) series of models developed by the American company OpenAI has continuously improved with each new release, consistently surpassing previous capabilities. These are among the most well-known large language models, capable of generating texts that are high in quality, coherence, and relevant to user queries. The latest version, GPT-4.5, released in February 2025, offers expanded natural language processing features and integration with web search. Its predecessors, GPT-4o and GPT-4o Mini, achieved success in multimodal processing of text, speech, and vision. As of early March 2025, four OpenAI models are ranked among the top 10 in the Chatbot Arena ratings.

The series of models developed by the Chinese company DeepSeek has set new benchmarks for innovation within the AI community. As of early March 2025, the DeepSeek-R3 model ranks sixth in the Chatbot Arena rating list, and it is also the leading open-source large language model.

The Qwen series from Alibaba covers a wide range of tasks, including code generation, understanding structured data, solving mathematical problems, as well as general language understanding and generation. Some models within this series are also available for free.

Grok AI is a generative AI chatbot developed by xAI, Elon Musk's company. This chatbot is integrated with the social media platform X (formerly Twitter) and offers users real-time information access and conversational experiences rich in wit and humor. Grok AI is designed to perform a broad spectrum of tasks, including answering questions, problem-solving, brainstorming, and generating images from text prompts. As of early March 2025, it holds the top position in the Chatbot Arena rankings.

Meta's LlaMA series, which released its latest model, LlaMA 3.3, in December 2024, features multimodal capabilities that enable it to process both text and images for in-depth analysis and response generation. This includes interpreting charts, maps, or translating texts identified within images. As of early March 2025, this model ranks among the top four open-source models but holds 28th position in the overall Chatbot Arena rating.

Series of models called Claude, developed by Anthropic. The most advanced version, Claude 3.7 Sonnet, combines multiple reasoning approaches to provide users with flexibility for quick responses or more in-depth, step-by-step problem solving. A distinctive feature of this model is its "Extended Thinking Mode," which employs a technique known as deliberate reasoning or cycles of self-reflection. This allows the model to iteratively improve its thought process, evaluate different reasoning paths, and optimize accuracy before finalizing its conclusion and presenting it to the user.

Mistral is developed by the French startup of the same name. Despite the fact that their models do not appear in the top-30 ranking list mentioned earlier, they still perfectly suit applications that require quick and accurate responses with low latency, such as virtual assistants, real-time data processing, and on-device management. Smaller model sizes enable their deployment on devices with limited computational resources.

Gemini is a series of closed-source models developed by Google. This model replaced Palm in powering the chatbot, which was renamed from Bard to Gemini after the model update. An open-source alternative directly from Google is the Gemma model, which demonstrates capabilities almost on par with Gemini.

All the mentioned artificial intelligence systems are based on the transformer architecture, which was first introduced in the paper "Attention is All You Need" by Vaswani and colleagues in 2017. This architecture has become the foundation for most modern text-generation models due to its efficiency in processing data sequences and its ability to enable parallel training (Vaswani et al., 2017). The foundation of these models is built upon deep neural networks consisting of numerous encoder and decoder layers that interact with each other to process information at various levels of abstraction. Transformer architectures rely on large datasets and powerful computing resources, which enable models to learn from vast amounts of information and improve their predictions and responses. The transformer architecture allows models to analyze large volumes of data simultaneously while maintaining contextual coherence, a critical factor for generating high-quality text. Thanks to the attention mechanism, transformers can focus on important parts of the text, ensuring logical sequence and coherence in the generated content. These advantages make transformer-based models leading solutions in the field of automated text generation.

Image and Video Generation

Using deep learning methods, particularly generative adversarial networks (GANs), artificial intelligence can generate realistic images and video clips that are often indistinguishable from real content. Generative adversarial networks (GAN) are a type of AI algorithm used in unsupervised learning. They consist of two neural networks competing against each other in a zero-sum game. This interaction enables one network to generate new data while the other evaluates its quality, leading to iterative improvements of both models during training (Goodfellow et al., 2014). Overall, this approach allows for the creation of images that frequently appear human-made and contain many realistic elements. It is applied in creativity, advertising, design, video games, and the film industry to produce visual effects, animations, and customized images on demand. Additionally, such technologies facilitate automation in editing and optimizing visual content, significantly saving time and resources.

Below is an overview of popular AI tools for image generation and manipulation; the order in this list is not indicative of ranking or rating of the tools.

Midjourney – a generative model specifically optimized for creating artistic images. Its main feature is the ability to produce visually rich and aesthetically appealing visuals. The architecture of the model utilizes deep neural networks trained on large datasets of artwork, enabling Midjourney to interpret complex artistic concepts and transform them into visual representations.

The latest iteration of the image generation model from OpenAI – DALL-E 3, provides high compatibility with enterprise and creative workflows. This model is distinguished by its improved contextual understanding and image generation capabilities, accurately translating complex textual descriptions into visuals. Its API integration and support for various formats make DALL-E 3 suitable for seamless deployment within existing content management, design, and marketing systems. A unique feature of DALL-E 3 is its ability to maintain high-resolution and detailed visuals, enabling the use of generated images in professional media projects without the need for further editing.

Ideogram specializes in generating images where precise representation of textual components is essential. The model employs advanced natural language processing algorithms that enable it not only to accurately interpret text prompts but also to embed textual elements into visual compositions, a challenge that many other models currently face. This makes Ideogram an ideal choice for creating infographics, advertising materials, and any other visual products where text readability is crucial.

Stable Diffusion is an open-source model that allows researchers, developers, and artists to freely use, modify, and integrate it into their projects. Thanks to its open license, the model supports a wide range of applications and encourages innovation across the fields of image generation and machine learning in general. Additionally, an active community actively supports and enhances Stable Diffusion, which promotes continuous development and adaptation of the model to meet new, increasingly complex user requirements.

FLUX, as an alternative to Stable Diffusion, offers a different approach to image generation based on principles similar to those of Stable Diffusion but with key differences in architecture and functionality. This model focuses on improving generation speed and resource optimization, making it more efficient for use in environments with limited computational capabilities. The models are released under various licenses, some of which include open-source options.

Adobe Firefly specializes in integrating artificial intelligence into photo editing and creation processes. The model employs advanced machine learning techniques to automatically enhance, transform, and combine AI-generated elements with existing photographic materials. This enables professional photographers and designers to achieve high-quality results with minimal time spent on manual photo editing.

Adobe Firefly focuses on seamlessly integrating artificial intelligence into photo editing and creation workflows. Using state-of-the-art machine learning methods, the model automatically improves, modifies, and blends AI-generated elements with existing photographic content. This allows professional photographers and designers to produce high-quality results efficiently, minimizing the time required for manual editing.

Imagen 3 is an advanced image generation model developed by Google that utilizes enhanced diffusion techniques to create high-quality and realistic visual content based on textual descriptions. Its main feature is the ability to deeply understand the semantic context of text prompts, enabling it to generate images with high precision and detailed accuracy.

All these AI-based image generators accept a text description (commonly referred to as a "prompt") and produce a corresponding image based on it. This opens truly limitless possibilities, as your prompt can encompass any request: from a highly realistic "night starry sky over a field in the style of Vincent van Gogh" (see Fig. 2) to an absurd "orange cat with Thor's hammer riding a blue whale in an underwater realm" (see Fig. 3).

Figure 2. Examples of an image generated by the reve.art service based on the prompt "Night starry sky over a field in the style of Vincent van Gogh". Source: own elaboration

Figure 3. Examples of an image generated by the Midjourney based on the prompt "orange cat with Thor's hammer riding on a blue whale in the underwater kingdom". Source: own elaboration

In recent years, AI-based image generators have gained enormous popularity, but their quality was previously considered subpar. Although the technologies used to develop them were incredibly powerful and impressive, at least from a scientific perspective, their results did not particularly excite the general public (Rayner, 2016). Even the original DALL-E, launched in 2021, was more of a "novelty" than a groundbreaking breakthrough that shook the world.

Continuing the topic of static images, video generation and editing are also advancing with AI. AI can automate tasks such as scene detection, trimming, sequencing, adding transition effects, or even extending and expanding video clips. Advanced speech recognition and natural language processing technologies enable AI to convert spoken dialogue into text in real-time, in multiple languages. These technologies help break down accessibility barriers, making content more available to a wider audience.

Adobe Premiere Pro, a professional editing software, is equipped with artificial intelligence to simplify complex tasks and speed up the editing process. Using the Generative Extend feature, users can expand clips, add frames, or generate missing ambient sounds. Other capabilities of Adobe Sensei include automatic color correction, suggestions for music tracks that match the mood, and synchronization of audio and video tracks based on sound wave analysis.

Sora, a text-to-video generation system based on transformer architectures, creates short clips (ranging from a few seconds to a minute) from textual descriptions. Users specify the scene, style, and mood of the video, and the system generates corresponding frames featuring artificially synthesized objects, characters, and animations. Thanks to interactive parameters, users can adjust lighting, camera angles, and movement speed of objects in real-time. Additionally, videos can be stylized to fit various genres such as cartoons, documentaries, or cinematic styles. Sora also offers REST API and interfaces for automation within production pipelines, as well as plugins for popular editing and animation software.

Captions.ai offers automatic subtitle generation, representing another advancement in video enhancement. Using automatic speech recognition (ASR), the service analyzes the audio track and converts it into text with high accuracy (up to 95%-98% for English). It also includes machine translation and localization features, providing Ukrainian-English and multilingual subtitle translations in real-time, with synchronization that aligns speech with audio for seamless viewing.

Artificial intelligence is transforming the filmmaking and video production industry by accelerating processes such as transcription, editing, color correction, audio processing, and subtitle creation. Whether working on short social media videos or full-length feature films, AI-powered tools reduce editing time and open new creative possibilities, enabling filmmakers to work more efficiently and explore innovative approaches to storytelling.

Thanks to these tools, workflows in video editing, production, and content localization become significantly faster and more cost-effective in terms of human resources. Generative modules transform creative ideas into finished clips within minutes, while speech recognition and translation systems make videos accessible to a global audience without the need for additional expenses on manual translation or subtitling.

Music Composition and Sound Design

AI is used to create musical compositions, write melodies and chord progressions, and generate sound effects. Models and services such as OpenAI's MuseNet, suno.com, udio.com, and others can produce music in various styles and genres, which is helpful for musicians, producers, and advertising agencies. Platforms like elevenlabs.io and speechify.com enable rapid text-to-audio conversion in dozens of languages and with multiple voices. Additionally, if voice actors work with their own voices but lack professional recording studio conditions, the service podcast.adobe.com can enhance the sound quality of recorded voices to near-studio levels, meeting modern audio quality standards for video content such as personal vlogs, news, or entertainment channels.

Creating Presentations

As Oliinyk & Biziuk stated (2025), in the modern world, information plays a crucial role in education, business, and scientific research. Presentations are one of the most effective ways to convey and showcase information to an audience because they combine text, graphics, and visual effects. However, creating a high-quality presentation requires substantial effort: it involves carefully structuring the content, selecting appropriate design elements, and supplementing the material with relevant graphics and, if necessary, animations.

Artificial intelligence can analyze documents or data sets to generate slides, summaries, and visual data representations (such as charts and graphs) necessary for effective information presentation.

AI-powered platforms enable the creation of slide decks and dynamic visual content that adapt to user-inputted data. The combination of text, visual elements, and synthesized speech ensures seamless integration into educational videos or professional presentations.

Among the tested tools, we will highlight a number of online applications that are worth noting.

Gamma.app – is a free, user-friendly tool that allows importing documents and supports real-time collaborative editing.

Decktopus offers partial free access, providing only the generation of a text-based presentation outline, while creating visual slides is a paid feature. Its interface is very user-friendly, and the quality of the generated text is quite acceptable.

Slidesgo has a limit on free presentation generation and is quite easy to use. In addition, the service offers a lesson plan generator and an interactive quiz feature, which are convenient for both teachers, students, and the business sector to increase interactivity during material presentations.

Prezi also has a usage limit for free accounts. Its visual style is distinctive, as it does not generate standard rectangular slides; instead, the final presentation is highly interactive. Additionally, Prezi supports integration with online meeting platforms such as Zoom, Webex, and Microsoft Teams, making it a comprehensive solution for remote presentations.

Content Personalization, Automated Editing, and Proofreading

One of the key areas is content personalization tailored to individual user preferences. AI analyzes behavioral data, interests, and interactions with content to generate personalized recommendations, suggestions, and even dynamically changing narratives in digital media. This increases user engagement and enhances the effectiveness of marketing campaigns, as the content becomes more relevant and appealing to each individual consumer.

Using AI for automatic detection of grammatical errors, stylistic issues, and improving text structure can significantly enhance the quality of created content. AI-based tools can suggest alternative phrasings, ensure consistency in terminology and tone, and optimize texts for better search engine optimization (SEO).

Virtual Assistants and Chatbots

AI-powered virtual assistants are capable of engaging in dialogues with users, providing information, and recommendations, or even generating interactive content in real-time. These systems are widely used in customer support, online education, and entertainment, offering an interactive and personalized experience for users.

Challenges and Limitations

Technical challenges and limitations, including computational complexity.

Most of the technical challenges and limitations are related to the computational complexity of modern AI systems. Below is a list of the main technical difficulties.

Massive computational resources. Training generative pre-trained transformers (such as GPT, Gemini, etc.) requires specialized hardware capable of supporting parallel data processing at high frequencies. Graphics Processing Units (GPU) and Tensor Processing Units (TPU) are essential. The training time and electricity consumption grow exponentially with the increase in neural network size (with parameters reaching hundreds of billions).

Memory and scalability. AI models use attention algorithms where computational complexity often scales as $O(n^2)$ concerning input sequence length, creating problems when working with very long texts. Adaptation of models for use on local devices (personal computers, smartphones, or small-scale cloud-based systems) is challenging due to limited processing power and the large size of ready-made AI models.

A balance between scale and specialization. While increasing model size can improve performance, such models sometimes become less controllable and exhibit "unexpected" or "emergent" properties.

Algorithmic and optimization challenges. Companies are continually searching for optimal architectures and approaches to optimization. Distributed training helps overcome hardware limitations but requires complex engineering and significant computational resources.

Models working with audio have additional requirements for RAM and overall processing power. Generative audio systems (like ElevenLabs, Suno, etc.) for speech and audio synthesis require not only replicating acoustic features but also ensuring realistic intonation and emotional expression, which demands high temporal resolution processing.

Another major challenge is preparing training data. For large language models, enormous volumes of text are needed, which can contain both useful information and noise, including unreliable or false data, potentially leading to unsatisfactory model performance. For example, in a blog for developers, Freise (2025) discusses the AI tool GitHub Copilot (designed by GitHub and OpenAI) to assist Visual Studio Code users through code autocompletion. Its slogan is “Your AI-powered programming assistant”. Mario Freise observes that this is somewhat accurate, as it feels like programming with someone constantly coding along with you – an extremely distracting person “who never takes a break.” He likens this to joint programming with someone who understands nothing about the problem being solved. AI is a powerful tool but not a universal solution to all problems. Additionally, like any tool, it requires proper training to use effectively.

In summary, different models possess specific architectural features and approaches to content generation tasks. Nonetheless, all face similar challenges related to scaling, efficient use of computational resources, and ensuring high quality and stability. These challenges remain active areas of research, with developers continually seeking compromises between scale, efficiency, and practical application of AI systems.

Ethical and Social Challenges.

According to Sharma (2025), it is important to address ethical and social issues related to the automation of creative processes. This includes concerns about algorithm transparency, responsibility for generated content, and maintaining a balance between automation and preserving human creative potential.

The integration of machine learning models into content generation presents a range of challenges and limitations that need to be addressed to fully realize their potential. Despite numerous advantages, applying generative AI in the media, publishing, and printing industries faces several obstacles. One major issue is ensuring the quality and accuracy of the generated content. AI models can reproduce biases present in training data, which may lead to the production of incorrect or discriminatory information (Sharma, 2025). Additionally, safeguarding intellectual property rights when using generative models is a pressing concern, as it raises questions about ownership rights over AI-created content.

Among the main key ethical challenges, the following can be highlighted.

The issue of authenticity and authorship: generative AI models challenge traditional notions of creativity and intellectual property since, firstly, they are trained on large datasets of existing works, and secondly, they can produce creations that are difficult to distinguish from human-made outputs. This almost makes it impossible to determine clear authorship.

Risks of manipulative influence: due to the high quality of generated content, AI can be used to spread or create disinformation and exert psychological influence on individuals. This poses a threat to social trust and can unlawfully impact public consciousness.

Potential discrimination: learning algorithms are often based on biased data since machines analyze data in ways different from humans, which can lead to the reproduction and even amplification of existing social prejudices.

Oliinyk (2024) notes that ethical principles alone cannot guarantee full accountability for artificial intelligence. As Mittelstadt (2019) emphasizes, there is a critical need to develop comprehensive mechanisms for monitoring and regulating ethical aspects within AI technologies. In his work, he argues that the misconception that insufficient attention to ethics leads solely to poor design decisions – creating systems that harm users – is flawed. The promising prospects of AI are largely linked to its apparent ability to replace or complement human experience. This flexibility means that AI inevitably becomes entangled in the ethical and political issues associated with the practices it is applied.

The study on the impact of modern technologies on contemporary science – including research methods, data analysis, and automation of research processes – conducted by Anatoliy Shevchenko, Maksym Vakulenko, and Mykyta Klymenko demonstrates how AI is transforming perceptions of scientific objectivity, rationality, and creativity. The researchers also identify ethical challenges associated with the use of AI in research (Shevchenko et al., 2022).

One significant challenge is the tendency of AI-generated content to lack the creativity, originality, and emotional depth that human creators can provide. As Van Otten (2022) states, while machine learning models can produce coherent and contextually relevant content, they often struggle to replicate the nuanced understanding and imaginative abilities characteristic of human thinking. This limitation can result in content that appears superficial or uninspiring, undermining the intended impact of the material.

Another important issue is the risk of spreading biases and stereotypes. AI models are trained on existing data that may contain embedded prejudices reflecting societal stereotypes. If training datasets are flawed or biased, the generated content may inadvertently reinforce harmful stereotypes, leading to ethical concerns, especially in areas like media representation and advertising (Liz, 2023; Van Otten, 2022). Eliminating these biases requires continuous monitoring of training data and implementing strategies to reduce bias within AI systems.

The reliability and accuracy of AI-generated content pose additional challenges. Incidents of "hallucinations," where models produce false or nonsensical information, highlight limitations in factual accuracy and the potential for disinformation (AIContentfy team, 2023; Kharwal, 2024). These issues necessitate the implementation of robust verification processes to ensure that AI-produced content meets acceptable standards of accuracy and trustworthiness.

The rapid evolution of AI technologies has outpaced existing regulatory frameworks, leading to a lack of comprehensive guidelines for the ethical use of AI in content creation. While some organizations have begun developing self-regulatory documents to guide AI applications, there is a need for the establishment of unified regulations that can adapt to the fast-changing landscape of technology and societal expectations (World Wide Web Consortium, 2024). Without effective regulation, the potential for misuse or manipulation of AI-generated content for malicious purposes increases, raising serious ethical concerns.

Finally, the broader implications of AI systems for societal resilience and social structures cannot be ignored. The adoption of machine learning applications can impact employment, the economy, and access to quality information (Liz, 2023). As these technologies develop, stakeholders must consider their societal effects and prioritize practices that do not undermine the integrity of physical, social, and political ecosystems.

Future trends, prospects, and development

Looking ahead, it can be anticipated that the trend toward increased multimodality – where AI can integrate and process different types of data such as text, images, and audio – will fundamentally transform how users interact with technology. This innovation promises to facilitate more natural human-computer interactions and open new possibilities for personalized learning and creative self-expression. As AI tools become an integral part of content creation, content creators will need to continually adapt and learn new technologies to stay relevant in this rapidly evolving environment.

Current trends indicate that technologies such as natural language processing and machine learning will enable the creation of even more complex forms of content, paving the way for hyper-personalized materials tailored to individual user preferences (Huang et al., 2025; Van Otten, 2022). This technological development may also promote the growth of AI-driven platforms that optimize the entire content production process, enhancing efficiency and productivity across various sectors, including publishing and marketing (Huang et al., 2025; Spreadbot, 2024).

With the advancement of AI technologies, multimedia content generation – from simple text to images and videos – is expected to become increasingly automated. This trend is likely to facilitate the creation of rich, interactive experiences that engage users in new ways. Additionally, the rise of AI-generated content will alter the dynamics of content creation, challenging traditional roles within the publishing industry (Huang et al., 2025).

However, the integration of AI into content creation brings with it the need to address ethical and regulatory issues (Oliinyk, 2024). As AI-generated content becomes more widespread, questions concerning authorship and responsibility will require ongoing policy development to regulate the principles of using these technologies. AI is also expected to play a crucial role in the ongoing fight against disinformation within the content environment. By employing machine learning algorithms to analyze and verify the accuracy of information, AI can assist publishers and content creators in maintaining the integrity of their materials. This application of AI not only enhances the reliability of content but also helps strengthen trust in the industry.

Conclusions

In this article, we try to demonstrate that artificial intelligence generated content serves as a logical continuation and complement to traditional content creation methods – Professional Generated Content and User Generated Content. The use of machine learning algorithms and deep neural networks reduces costs associated with human resources and technical infrastructure for content generation. This significantly increases the speed and scale of producing texts, images, presentations, videos, and audio materials, enabling both specialized professionals and enthusiasts without extensive experience or professional training to contribute effectively.

As an example, listed leading models such as GPT, DeepSeek, Qwen, LLaMA, Claude, Gemini, and others demonstrate that modern transformer architectures with attention mechanisms are capable of generating high-quality content that meets user expectations. The use of Generative Adversarial Networks enables the creation of realistic images and videos. Additionally, systems employing Automatic Speech Recognition and Natural Language Processing can convert live speech into subtitles or text, and vice versa, synthesize voice and narration from text in multiple languages within minutes.

The integration of AI tools into advertising, educational, and media processes expands creative possibilities. From automatic editing and proofreading of texts to music and sound effects generation, as well as creating dynamic presentations and personalized video stories. At the same time, widespread access to these technologies lowers the barrier to entry for new authors and content creators.

The advantages of artificial intelligence generated content are also accompanied by significant challenges: model biases, the risks of false or misleading outputs, issues related to intellectual property rights, and ethical and social responsibilities. Critical concerns include content reliability and authenticity, the risks of manipulation and spreading disinformation, as well as the threat of displacing human creativity.

Along with informing the public and promoting AI technologies, there is a critical need to develop and implement clear standards, regulatory frameworks, and ethical codes. Establishing mechanisms for quality audits and transparency of algorithms will help address both technical and ethical limitations. Involving interdisciplinary communities, government agencies, and private institutions in shaping these regulations is essential for the responsible development of the entire AI-generated content industry.

A promising area is the further evolution of multimodal systems capable of integrating text, images, audio, and video into unified interactive products, such as presentations. Additionally, the development of hyper-personalization technologies tailored to individual user needs is crucial. Advances in AI-based fact-checking and verification tools will help reduce the spread of disinformation and strengthen trust in digital media as well as in AI technologies overall.

Overall, artificial intelligence does not replace humans in the content creation process but serves as a powerful tool that extends human capabilities. This allows creators to focus more on conceptual and creative tasks rather than routine activities or learning complex software and tools. Future research and practices should aim for a harmonious integration of automated tools and human intelligence to produce high-quality, ethical content.

AIGC opens a new one in which the main issues will be responsibility, standardization and synergy of automated technologies with human creativity.

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