BYTES VS BIO: PROSPECTS AND CONCERNS IN AI, ART, AND CULTURE'S CONFLUENCE

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Abstract – The paper provides an overview of the main current intersections between Artificial Intelligence (AI) and the realms of art and culture. It evaluates whether AI technologies can bring about changes in aesthetic preferences and the creative production process while preserving human originality. The exploration covers AI's implications in art and culture, drawing inspiration from Manovich's insights on supervised and unsupervised machine learning's impact on traditional and unexplored aesthetics. The paper delves into AI's influence on individual artists and their creations, its role in cinematic storytelling, trailer creation, immersive cinema, and support from companies like Google and Microsoft. Additionally, it examines AI's contribution to cultural archives, museums, and institutions, recognizing the complexity of evaluating AI-generated art and emphasizing the need for time to assess its cultural impact, positioning AI as a potential stimulant for imagination and emotion alongside human creativity.

INTRODUCTION

Artificial Intelligence (AI) is increasingly permeating our daily lives through problem-solving and decision support applications in political, medical, economic, and process automation domains (such as industry, robotics, and autonomous driving), as well as in the management of civil and social life, including security, home automation, and marketing. Among the many discussions accompanying this technological revolution, the application of Artificial Intelligence to art and culture is at the center of numerous debates ranging from nostalgic or moralistic considerations to techno-enthusiastic ones, without, however, analyzing the various facets of the phenomenon. While the bibliography on other AI applications is extensive, the applications of AI to art and culture are still relatively unexplored, probably due to the delicate issue of artistic hybridization or, more precisely, the impact of AI on the aspects of originality in art.

Most scholarly discussions on this matter are focused on investigating the creative potential of intelligent machines [10], or on debates surrounding originality and copyright, centering the discourse on the opportunity to promote or oppose the use of AI in the artistic domain. Within this framework, Lev Manovich's book [9] establishes the foundations for a comprehensive theoretical reference to frame the issue and understand the reasons for divergent reactions, whether in favour or against the integration of AI in cultural realms. Manovich embarks on a historical overview, starting from the early experiments of hybridization conducted in the 1960s, mostly concerning the creative relationship between the individual artist and their work, with a subsequent shift in focus from the 2000s towards a broader concept involving the public, largely due to AI's enhanced data analysis capabilities and the introduction of the Internet of Things (IoT). Manovich underscores how, with the AI boom in the 2000s, its impact on art and culture extends to two areas: the production of artworks and cultural events, and the critical-aesthetic evaluation of such productions, emphasizing how AI is capable of influencing the taste and aesthetic choices of the viewers, ultimately shaping their imagination.

From a production standpoint, debates revolve around the opposition between standardization and originality. It is queried whether AI affects the artist's production and originality or rather stimulates creativity, giving rise to new expressions, as happened in the wake of the industrial revolution (consider, for instance, Marinetti's manifesto of Futurism). Answering these questions is

complex, as unlike other technical tools adopted in artistic expressions in the past, the novelty introduced by AI since the 2000s involves machines that learn from experience, imitating human cognitive mechanisms, and, with the advent of Generative Adversarial Networks (GANs), combining learned notions to generate artistic impressions. Thus, it is pondered how much of the machine and how much of the artist resides in what is generated (or created?) and to what extent new works can be considered plagiarism or original. If this aspect alone is difficult to disentangle, the possibility of artificially influencing public tastes and trends is even more perplexing. For instance, research on YouTube's Recommendation System [7] shows how different algorithms can either confirm viewers' spontaneous tastes or influence new attitudes, thus creating mechanisms balancing artistic taste and influential marketing. Indeed, it is noteworthy that with the Internet, social media, and the emergence of influencers, the critical-aesthetic evaluation of artistic productions is no longer exclusively delegated to scholars and critics but has expanded to the more or less experienced public, often influenced by recommendation systems and sentiment analysis algorithms based on the accumulation of digitized cultural data and learning systems (Machine Learning) that analyze them, and, navigating through such big data, identify coherent paths. As highlighted by Manovic, such influence may be more or less reliable, depending on the training method used for Machine Learning. Indeed, if supervised machine learning is adopted, the result confirms and reinforces pre-existing aesthetic evaluation criteria, while unsupervised machine learning freely explores cultural data, identifying new, unpredictable, and often unexplored aesthetic perspectives, which may or may not be valid. In fact, in both cases, as in other applications of intelligent systems based on Machine Learning, the presence of bias could be decisive.

The relationship between art and AI is still a field of study in continuous evolution. The purpose of this paper is to present an overview of the current intersections between Artificial Intelligence and the realms of art and culture, to contribute to the debate on preserving traditions versus introducing innovative technologies. The second paragraph will provide an overview of AI applications in the creative field, artistic production, and culture in general, including event curation and cultural heritage preservation, also examining AI's impact on cinematic storytelling, music, figurative arts, and considering AI's contribution to cultural archives, museums, and institutions. The brief overview will conclude with a discussion of the points outlined, leaving room for further exploration.

AI IN ART AND CULTURE: A REVIEW

The influence exerted by AI directly on artists manifests in various ways across multiple applications. For instance, Ryoji Ikeda, a visual and sound artist, presented a video installation (https://www.youtube.com/watch?v=r2lKWlBM-2w, accessed online on April 2, 2024) managed by AI, immersing the viewer in an interactive environment. Other scholars [2][4][5][13] have employed EEG-based Brain-Computer Interface to collect cognitive data from subjects exposed to diverse artistic stimuli (musical, visual). Subsequently, these data are analysed via AI to discern the relationship between art and technology from both the spectator's and the artist's perspectives, aiming to identify the mechanisms of creativity and the potentially enabling role of technology in art.

In addition to research applications, there are significant examples of AI-assisted artistic production that spark debate regarding the originality of the resulting work. For instance, the collective Obvious created the piece "Portrait of Edmond Belamy" [6] was auctioned by Christie's in October 2018 for a substantial sum. The collective Obvious trained Generative Adversial Network (GAN) models on over fifteen thousand portraits from the Renaissance and modern eras, resulting in an imitative work reminiscent of past centuries' painting styles. This case exemplifies the intersection of AI and art, raising questions about creativity, authorship, and the role of technology in artistic expression.

There are also expressions whose originality, however, can hardly be doubted, despite the contribution of AI. An example is provided by "Emissaries" (https://www.youtube.com/watch?v=TO6Luilc4Bo&t=62s&ab_channel=LouisianaChannel, accessed online on April 2, 2024), created by Ian Cheng, which he himself defines as an "habitat for stories" or a "videogame that plays itself" [1]. In "Emissaries", computer-generated flora and fauna interact and recombine, giving rise to an infinite narrative flow.

Consideration must also be given to how AI is more broadly reshaping the production of the creative industry. An illustrative example comes from the film industry, where the use of AI has stirred discontent and protests among movie industry professionals at various levels. AI is employed for storytelling, scriptwriting, trailer creation tailored to audience preferences, and in immersive and interactive cinema, sparking discussions about the cultural implications of technology adoption [3][12]. Another instance lies in the realm of music, where AI methodologies generate harmonies or even entire musical compositions. For instance, in July 2019, Microsoft initiated the "AI for Cultural Heritage" project (https://news.microsoft.com/on-the-issues/2019/07/30/ai-changing-arts-culture/, accessed online on April 2, 2024) with the aim of utilising intelligent agents for preserving culture and enhancing art accessibility. Similarly, Google is funding artists interested in developing AI-centric art projects (https://experiments.withgoogle.com/ami-grants, accessed online on April 2, 2024). Echoing Microsoft's intentions, the significance of AI in managing cultural archives, content exploration, and cataloguing must be acknowledged. A case in point is the "Identifying art through machine learning" project (https://www.moma.org/calendar/exhibitions/history/identifying-art, accessed online on April 2, 2024) developed by MoMA New York and the Google Art & Culture Lab, which explores museum repositories, seeking connections between online collection works and documentation of MoMA exhibitions since 1929, thereby proposing new historical-artistic reading paths. Likewise, the Tate Gallery in London launched "Recognition" (https://www.tate.org.uk/whats-on/tate-britain/ik-prize-2016-recognition#:~:text=Recognition%2C%20winner%20of%20IK%20Prize,an%20installation%20at%20Tate%20Britain, accessed online on April 2, 2024) an AI programme associating images of artworks stored in the museum with Reuters' journalistic images, uncovering unexpected cultural connections and insights.

A sector experiencing significant development driven by AI pertains to exhibitions and art shows, where the relationship between AI, art, and culture takes center stage. For instance, exhibitions like "Artificial Intelligence and Intercultural Dialogue" at the Hermitage Museum in St. Petersburg (https://www.hermitagemuseum.org/wps/portal/hermitage/what-s-on/temp_exh/!ut/p/z0/fY7BDoIwEER_xUvPu8WExmNjPBQPeDGBvZhqGliRLWBD8O9FPsDjT F7mDRBUQOJnbnziKP615pryW2ltrvdHLEp3NmhLfT0547KLM1AA_QfWBX6OI1mgR5QUlgR VG6aek2_CLojCrZakMCwt3_lnfitMoR_i5KePwgz1QSGLxHn7BUNH9Rc-4SNP/, accessed online on April 2, 2024), or initiatives like the Biennale of Bucharest, where in 2022, the Jarvis algorithm was tasked with exploring galleries, universities, institutions, and cultural entities to select artists for the exhibition (https://www.biennialfoundation.org/2020/05/the-10th-bucharest-biennale-to-employ-machine-learning-and-artificial-intelligence/, accessed online on April 2, 2024), exemplify this trend.

Lastly, to bring us back to the theme of AI's direct and indirect influence on the aesthetic perception of art and the cultural orientation of the public, it is worth mentioning the project undertaken by the Metropolitan Museum of Art in New York, born from collaboration between Microsoft and MIT (https://www.metmuseum.org/it/about-the-met/policies-and-documents/open-access/met-microsoft-mit, accessed online on April 2, 2024). This project aims to utilise AI to reconsider the public's approach to exhibited artworks, re-evaluating the semantic categories of social media posts, the narrative lines of museum tours, and the tagging of exhibited works. Here, Manovic's considerations, outlined at the beginning of this paper, regarding the critical and constructive examination of AI usage in the cultural context, are relevant. It is essential to grasp

opportunities given by AI, while thoroughly understanding its mechanisms to avoid potential biases.

CONCLUSION

The conducted review is by no means exhaustive but aims to provide examples and insights for further investigation, indicating significant research directions. Indeed, it is challenging to establish criteria for aesthetically evaluating artistic products generated through either complete or partial AI utilization, while acknowledging the constructive contribution AI can make to the cultural sphere. However, a critical approach is necessary to monitor potential misuse of technologies and influences resulting from biases due to the lack of input from experts not only in technology but also in the international cultural landscape.

Finally, it should be noted that the advent of AI is sparking a legal debate – not addressed in this brief overview – regarding copyright issues [11].

The definition of "art" has evolved over time, enabling the creation of new paths and the exploration of new expressive means, wherein technology has played an increasingly dominant role. The debate surrounding the use of AI in the cultural domain is particularly heated because, unlike other techniques and technologies introduced in the creative sector in the past, AI machines experience, learn, thus simulating the human approach and blurring the line between human and automatic input based on learning from other artists, thus questioning the concept of originality and raising concerns about the possibility of plagiarism. However, although it is still challenging to delineate the boundary between originality and plagiarism and between exploration and manipulation of cultural attitudes, it is essential not to overlook that the use of AI also provides significant contributions to cultural preservation, historical-artistic investigation, research, and exploration of new exhibition methods. Just as it is necessary to seek a balance between automation and human creativity [8], similarly, understanding how to use AI tools to explore new cultural paths without manipulating public taste is crucial.

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