THE ART OF ALGORITHMS: THE RISE OF DIGITAL WORKS WITH THE ARTIFICIAL INTELLIGENCE

Dr. Öğr. Üyesi Mustafa GÜNAY
İstanbul Gelişim University, İstanbul, Türkiye, mgunay@gelisim.edu.tr
ORCID: 0000-0002-9286-6500
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Doç. Dr. Abdulkadir ÖZDEMİR
Hitit University, Çorum, Türkiye, abdulkadirozdemir@hitit.edu.tr
ORCID: 0000-0002-3337-4274

ABSTRACT

This paper discusses the rise of digital artworks and the ways in which artificial intelligence technologies are revolutionizing the art world. The artificial intelligence allows artists and creative professionals to develop their works in new and unexpected ways and expands the definition and scope of the art. The artworks supported by the artificial intelligence demonstrate how technology and creativity may create new forms of expression and art together. These artworks offer a different perspective from the traditional understanding of art and bring a new breath to the art world. The artists can handle their works from a different perspective with the artificial intelligence algorithms and try new techniques. The exhibition of artworks produced by the artificial intelligence in the digital art galleries increases the accessibility and shareability of art, allowing it to reach a global audience.   Thus, the power of art can reach and interact with wider masses.   In this context, the ways in which artificial intelligence creates a transformation in art production and the effects of this transformation on the concepts of artistic expression, creativity, and originality are evaluated in detail. As a result, artificial intelligence technologies play an important role in the art world and form the future of the art. These technologies offer artists new creative opportunities, expand the boundaries of art, and contribute to the rise of digital artworks. Artworks created using artificial intelligence signify a new chapter in the evolution of art.

Keywords: Artificial intelligence, Algorithm, Digital art.

INTRODUCTION

In today's swiftly evolving digital age, artificial intelligence (AI) has been a leading force behind not only technological innovations but also revolutionary transformations in the art world.   The capabilities of AI to comprehend and produce art have transcended the traditional ways, resulting in a novel collaboration between artists and algorithms.   This collaboration has elevated the creativity to new levels, leading to a dramatic increase in the diversity and accessibility of digital artworks. The digitalization of art allows artists to use artificial intelligence as a tool during their creativity, while also offering art lovers previously unimaginable experiences.

The potential of AI in art has not only been limited to aesthetic innovations, but has also brought about profound debates on the meaning, value, and possession of the art. Works produced by algorithms lead to a redefinition of the human role during the creativity and have the potential to remodel the nature and future of the art.   In this new era, the interaction of the artists with AI results in the expansion of artistic expressions and the redrawing of the boundaries of art; viewers are therefore confronted with the innovative perspectives offered by digital works. This paper aims to thoroughly examine this exciting rise of artificial intelligence and digital art, the nature of this creative collaboration, and the doors it opens in the art world.

Embracing Algorithms with Art

It describes how artificial intelligence (AI) has revolutionized the art world. The algorithms and artificial intelligence can now also produce the art, which has traditionally been identified with human creativity. Algorithms both help artists in their creativity and can independently produce artworks. For example, AI-generated visual artworks, music, poetry, and many other creative fields are expanding the boundaries of art. This union redefines the nature of the art, demonstrating the ways in which collaboration between men and machines can lead to new and innovative artworks. However, this process also raises new questions about the possession, originality, and value of the art. Embracing the algorithms with art opens the doors to a whole new era in the creative world (Colton, & Wiggins, 2012).

Artificial Intelligence and Art

Artificial intelligence (AI) and art have formed a remarkable combination in recent years, revolutionizing creativity. In addition to the traditional art forms, AI offers new tools to the artists, allowing them to expand their potential in the creativity.   For example, AI algorithms can mimic a particular art style by analyzing large amounts of data, produce new visual works, or create musical compositions.   This offers a previously inaccessible source of inspiration for the artists and enriches the expression forms of the art (Özdemir, & Günay, 2023).

Embracing AI with art changes not only the process of producing art, but also the meaning of art and the relationship it establishes with the audience. The works produced by the algorithms rethink the concepts of

originality and creativity in art.   These works raise new questions that ask the role of the artist and the nature of the creative process.   In addition, AI-generated artworks also require new approaches in areas such as collecting, curation, and art criticism (Güney, & Yavuz, 2020).

Embracing artificial intelligence with art starts an era that both extends the artistic expression and requires thinking better about the nature of the art.   This process is destined to leave a lasting impact on the future of art.

The History of Artificial Intelligence Based Art

The history of artificial intelligence-based art dates back to the middle of the 20th century with the development of computer technology. The computer scientists and artists had used the algorithms and succeeded in creating the first digital artworks in the 1960s. One of the leading names is German artist Frieder Nake, who produced art with the computer graphics. Nake used the mathematical formulas and created the artworks, and these works are the first models that show the algorithms used in artistic production. Harold Cohen developed the artificial intelligence software named "AARON" in this period, and this software made drawings within the framework of the rules designated by Cohen and functioned as a self-learning artist (Yıldırım, 2024).

The artificial intelligence-based art improved in the 21st century. The development of machine learning and deep learning algorithms provided the occurrence of more complicated and creative artworks. In particular, algorithms like Generative Adversarial Networks (GAN) have created a new period in the art since the 2010s. GANs produced artworks between two neural networks through a competitive process and revealed more authentic and impressive digital artworks. The artworks produced by the artificial intelligence offered for sale at auction houses in this period, placed in the exhibitions, and raised a considerable interest in the art world (Manovich, 2016). The development of artificial intelligence-based art brought in profound debates about what art is and will be and had a permanent effect in creative fields.

Evolution of Digital Works

The evolution of the digital works includes the digitalization of the art and the emergence of new creative forms, together with the rapid development of the technology. The first digital artworks were produced in the 1960s with the discovery of the graphical abilities of computers.   The artists used the computer codes to create geometrical shapes and patterns in this period. Digital art became more accessible in the 1980s and 1990s with the popularity of personal computers, and artists began to use the digital tools to produce works in various media such as images, photographs, video, and animation (Grau, 2003).

Digital art began to reach a global audience with the rise of the internet and social media in the 21st century. In particular, the concept of NFT (Non-Fungible Token) derived from blockchain technology redefined the

possession and value of digital works. The evolution of digital works has radically changed the production and consumption forms of the art (Günay, 2023).

Emergence of Computer-supported Art

The emergence of computer-supported art dates back to the middle of the 20th century and has advanced in parallel with the development of computer technology. The 1950s and 1960s were the periods when computers were used for scientific and military purposes, but some visionary artists and computer scientists noticed the potential of this novel technology in using the creative process. The computers were first used as a tool in the artistic production in this period. One of the leading artists of computer-supported art is British artist and computer scientist Harold Cohen. Cohen developed the artificial intelligence software named "AARON" in the 1970s, and this software makes drawings itself according to the rules designated by the artist. This was the most important example that shows how computers become a creative partner in the art (Bustillos, 2013).

In the same period, German artist Frieder Nake used the mathematical algorithms to produce the artworks with the computers. Nake's works showed how computers can be programmed to create artistic compositions. These early period works laid the foundation of computer-supported art and allowed art to go beyond the conventional forms. The use of computers in artistic processes revolutionized the art world, and this prepared the ground for the emergence of new artistic disciplines like digital art, media arts, and interactive art. This process has radically changed the relationship of art with technology and provided artists with creative opportunities that were previously unimaginable (Brown, 2018).

Machine Learning and Art

Machine learning offered new creative opportunities to the art world and revolutionized artistic production. This technology allows computers to analyze and learn the big datasets, thus it can produce artworks and even mimic the art styles. In particular, machine learning algorithms like Generative Adversarial Networks (GAN) create extremely authentic and innovative artworks by training two artificial intelligence models in a competitive process. During this process, one model produces artworks while the other evaluates this work; thus both models advance all the time (Hertzmann, 2018).

Artists use the digital tools and create unique works with the machine learning, even providing the algorithms to act like artists and extend the creative processes. This technology pushes the boundaries of art, redefines the traditional understanding of art, and allows it to explore new artistic forms (Colton, & Wiggins, 2012).

Creativity with Deep Learning

Deep learning stands out as a technology that provides artificial intelligence to revolutionize creative fields. These systems, which were restructured by using neural networks, learn from big datasets and can create

complicated and authentic artworks. Deep learning can mimic the creative processes, especially in the fields of visual arts, music, and literature, and reveal new works. For example, a deep learning model can learn the styles of famous painters and create new paintings in those styles or analyze a music song and create a similar musical composition (Colton, & Wiggins, 2012).

This technology serves as a source of inspiration for artists while also opening up entirely new creative processes. The creativity expands the boundaries of art with deep learning, carries the human-machine cooperation to previously unimaginable levels and initiates a new era in the art.

Effects of Artificial Intelligence-Supported Art

Artificial intelligence-supported art created deep effects in the art world and radically changed the production, perception, and consumption styles of the art. The integration of AI with the art transforms conventional artistic processes and offers new creative tools and methods to artists. Artists produce previously impossible artworks by using AI algorithms, analyze complicated datasets, and create unique artworks with the inspiration of those datasets. This extends the boundaries of art and leads to the emergence of new artistic styles like digital art, generative art, and interactive art (Tekin, 2018).

AI-supported art has also raised important questions on the meaning and value of art. The works produced by algorithms require us to rethink concepts like originality, creativity, and the role of artist. The sales of such works at auctions and taking part in exhibitions show the increased interest for the acceptance of AI in the art world (Uzun, Akkuzu, & Kayrıcı, 2021).

However, the ethical dimensions of AI-supported art have been a matter of debate. Matters like the possession of the works, artist rights, and independent creativity of algorithms are widely discussed among artists, critics, and jurists. As AI-supported art continues to transform the creative industries, it will inevitably leave a permanent effect on the future of art.

Transformation at the Art Market

The art market has undergone a major transformation with the effect of digitalization and artificial intelligence. As the conventional art market is built around actual artworks and galleries, the rise of digital art changes the production and sales process of the art. In particular, the emergence of NFTs (Non-Fungible Token) ensures that digital artworks become unique and ownable; thus this creates a new economic model at the art market (Özkan, 2022).

Moreover, artworks produced by artificial intelligence have gained interest among collectors and art enthusiasts. These works exhibit the creative potential of the algorithms and push the conventional boundaries of art. While the transformation at the art market increases the accessibility of art, it has brought about new

debates on the meaning and assessment of forms of art. This dynamic transformation redefines the future of the art market (Kaya, 2021).

Art and Ethical Issues

Art and ethical issues include the complicated debates related to the effects of creative processes and artworks on society. The ethical dimensions of art are often related to the themes of artists at their works, used materials, and social effects of art. For example, some artworks can violate cultural and social sensitivities, leading to ethical discussions. In addition, the methods preferred by artists in their works and the ethical sources of the materials must be evaluated with environmental and social effects. These aspects of art raise the necessity of compliance with social values and norms.

The rise of artificial intelligence and digital art carried art and ethical issues to a new level. The possession of artworks produced by AI, originality, and artist rights lead to wide debates in the art world. The use of AI in the production of art questions the human role during creativity and opens up the ethical responsibility of algorithms for discussion. The participation form of these new technologies in the art and their ethical limits have a permanent effect on the future of art (Demir, 2019).

Art of Algorithms and Social Inequality

The use of algorithms in art brings up social inequality as well. Artificial intelligence and algorithms analyze large datasets and produce artworks; thus, these data may often reflect current social and cultural biases. If datasets do not sufficiently represent the history or cultural heritage of certain social groups, artworks produced by algorithms will reflect these shortages and reinforce social inequalities (Aydın, 2020).

In addition, the accessibility of artificial intelligence-supported art and value types in the art market can be effective on the social and economic conditions of artists. The sale of AI-based artworks at high prices can prevent digital art reaching wider masses and restrict the democratization of art. In this context, the role of algorithms in the art must be carefully discussed in order to address social inequalities and develop a more comprehensive understanding of art.

Future Artificial Intelligence and Aspects of Art

Future artificial intelligence and aspects of art will be redefined with the combination of technology and creativity. Artificial intelligence will offer more complicated and original methods in the art production, and support and expend the creativity of artists. AI algorithms can enrich forms of artistic expressions and develop new styles and techniques. For example, technologies such as deep learning and generative adversarial networks (GAN) can create previously impossible innovative artworks and offer different perspectives to artists (Artut, 2019).

In the future, the interaction of AI with art can also increase the accessibility and democratization of art. Digital platforms and AI-based tools provide artworks to reach wider masses and contribute to art becoming a universal language. However, ethical and social inequality will also become important during this period. AI's method of use in art production, diversity of datasets, and avoidance of algorithmic biases will be critical for this transformation to take place in fair, and inclusive manner (Hertzmann, 2018).

The evolution between art and artificial intelligence will redefine the creative processes and play an important role in future art. The contribution of technology to art will provide the emergence of new art forms and experiences.

Innovative Art Applications with Artificial Intelligence

Artificial intelligence (AI) transforms creative processes with innovative applications in the arts. AI algorithms offer new tools and techniques to artists, allowing them to create previously undiscovered aesthetics and styles. For example, original works of visual art or musical compositions produced by algorithms using Generative Adversarial Networks (GAN) extend the boundaries of artistic expressions. AI provides artists with the opportunity to create by inspiring data, mimic the style, or make entirely new artistic styles (Colton, & Wiggins, 2012).

Moreover, artificial intelligence plays an important role in interactive art and digital media projects. Artists can create interactive and dynamic experiences by using AI, and ensure viewers actively participate in artistic processes. While these kinds of applications enhance the accessibility of art, they offer more personal and interactive experiences to viewers. Innovative art applications with AI redefine the boundaries of artistic creation and experience and shape the future art (Yıldırım, 2024).

CONCLUSION and DISCUSSION

The integration of artificial intelligence into the art world has resulted in radical changes in the nature of art and creative processes. The use of algorithms in art offers new tools and techniques to artists, extends the traditional understanding of art, and paves the way for digital art. While these innovations have enriched the forms of artistic expression, they have also raised important issues such as social inequalities and ethical issues. The debates on possession, originality, and artistic value of works produced by artificial intelligence give clues about how the art world will adopt this transformation.

The role of artificial intelligence in the arts will deepen in the future, and its creative limits will be extended as well. AI-supported innovative art applications will give new experiences to both artists and viewers and provide democratization of art. However, it is required to pay attention to ethics and social inequality in order to perform this transformation in a fair and inclusive manner. The effects of artificial intelligence on art will lead to important changes in terms of both artistic expression and social values and shape the future of art.

ETHICAL TEXT

"This article has complied with the journal writing rules, publication principles, research and publication ethics rules, and journal ethics rules. Responsibility for any violations that may arise regarding the article belongs to the author(s). The article does NOT require ethics committee permission.

In this study, the contribution rate of the first author is 50% and the contribution rate of the second author is 50%.

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