How does AI technology revolutionize the art industry?

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ABSTRACT

Artificial intelligence solutions are enhanced in many areas of knowledge, including the arts. Indeed, the increasing availability of mass digitized artwork has been coupled with recent advances in artwork creation, restoration, pattern recognition, and computer vision..AI is offering new opportunities to support the arts field by helping researchers to develop automated and intelligent support tools. In particular, AI is productively changing the nature of creativity by challenging the traditional ones by pushing the limits of the current method to achieve better goals. This article addresses the question of how the future of this industry is destined to be more innovative and impactful in design and culture. It focuses on experimenting with a digital tool and how this technology is effectively working. We also focus on finding how much people are aware of this technology.

KEYWORDS: Generative Adversarial Networks (GAN), DALL-E, Convolutional Neural Networks (CNNs), Text to Image generator

1. INTRODUCTION

In day to day life, Artificial intelligence (AI) is revolutionizing many areas of knowledge and has established itself as a key technology in today's world. AI art introduced by the art created with the help of artificial intelligence(AI). It is a branch of computer science focused on making machines that imitate human intelligence or resemble the human brain through a set of algorithms. With the development of AI, it has becomes easier for artists to express their art without having to go through the process of creating an artwork like they used to do in past. AI is already being used to assist artists in many ways. For example, maximizing creativity and providing new tools with more time for artists to hone their crafts.

A new field of digital art is expanding the boundaries of creativity. Many algorithms were introduced to artist to learn specific artistic by analyzing many images. The algorithm then tries to generate new images while adhering to the learned aesthetics. The evolution of Artificial Intelligence and AI art came with the innovation of Generative Adversarial Network (GANs).AI image generator uses her two neural networks. The first neural network creates an image, and the second neural network uses examples from the internet to determine how realistic the image is. Once the image accuracy has been evaluated, the data is sent back to the original AI system. One of the most innovative algorithms that use AI to create new works of art is DALL•E 2 from OpenAI. DALL•E 2 generates images based solely on the text entered by the user. This

algorithm is used to create content, streamline process and optimize creative results.

Lately, it has become increasingly difficult to sift through the number of fraudulent artworks circulating in the art field, and the AI system provides an excellent tool to handle art authentication and forgery detection. AI is trained using machine learning and the whole set of images of the artist's works. The art recognition algorithm examines the brush strokes and produces an easy-to-read heat map that pinpoints which areas of the painting are most suspicious. By analyzing various features of the work like brushstrokes, forms, shapes, figures, and patterns through digital photographs it's easy to detect without investigating the invisible layers of the work through traditional methods of authentication like microscopy, infrared reflectography, or X-ray technology. Lately, it has become increasingly difficult to sort out the number of fraudulent works of art that are appearing in the art field, and the AI system provides us with an excellent tool to deal with art authentication and forgery detection.

AI is also used for restoration and retouching of works. Artwork restoration and retouching is a field that applies computer vision and AI to enhance human creativity. Scanning techniques and AI are now trying to recover missing fragments using convolutional neural networks (CNNs), which computers use to analyze visual images. An AI algorithm that detects damage and virtually reconstructs the original image (a process called inpainting). Similar techniques were used to reconstruct damaged photographs, reconstruct black-and-white color photographs, reconstruct images of frescoes, etc.

2. LITERATURE REVIEW:

Much research has been done over a years on potential use of AI in the creative industries. According to a recent survey conducted by Adobe[Footnote1], three-quarters of artists in the US, UK, Germany and Japan expect to use AI tools as assistants in areas such as image searching, editing and other "non-creative" tasks. This demonstrates the general acceptance of AI as a tool for the entire community, with most AI technologies designed to assist and support humans rather than replace them. Therefore, better collaboration between humans and AI technologies can maximize synergistic benefits. Caramiaux et al. (2019) recently explored AI in contemporary media and creative industries in his three

domains of creation, production and consumption. They provide details on AI/ML-based research and development, as well as emerging challenges and trends. The pace of AI research is driven not only by innovative algorithms, but also by the ability to generate, access, and store vast amounts of data, and the use of graphics processing architectures and parallel hardware to process these enormous amounts of data. To create original art, it's beneficial to support more variety and context when training AI systems. ML-based AI algorithms are data-driven. Therefore, data selection and preparation for creative applications will be key for future development. However, as AI techniques begin to permeate the creative sector, developers and users will continue to need to build trust. As technology advances, It must go hand in hand with a better understanding.

How can AI assist Artists with their creative process?

Many existing artist software packages are starting to incorporate rudimentary AI to help automate simple, repetitive tasks. The goal is to help people use products faster and eliminate time-consuming manual operations. As AI elements of digital art packages become more complex, new tools become available for artists to experiment in creative and unexpected ways. AI-based solutions can also be used to create things artists previously thought were impossible. AI announced the first version of DALL E in January 2021. That generate images from text with various concepts, and the mature version of DALL E 2 brings something more realistic. The tool can also seamlessly edit existing images by playing with elements such as shadows, reflections, and textures. These AI tools generate ideas, capture inspiration, and experiment with prototypes that are later edited into final products.

What is the Future of Art with AI?

AI has given new life to art. Art has always been viewed as a way of capturing the era in which it was created. But thanks to AI, it can now be done in a short amount of time. Artistic creation can be viewed as a way of creating innovative works from the interpretation of an individual's existence and environment. The difference between artificial intelligence and artists is the origin of his experience. Artists live and creatively revolve around events in uncertain environments.

Conversely, the artist decides the learning rules and environment of artificial intelligence, makes it dependent on the artist, and uses it as a tool. Just like an artist trains his hand to guide his brush to paint, we train artificial intelligence to create unique works of art that reflect the creator. This new relationship between humans as tools and artificial intelligence offers artists new perspectives of creation and reflection. AI makes artwork design and production easier, making previously unimaginable possibilities accessible to everyone.

3. METHODOLOGIES AND RESEARCH APPROACHES:

Gathering, analyzing, and "blending" quantitative and qualitative studies and methods into one study to understand a research question. Data collected through structured and controlled instruments like surveys and experiments. The data collected is quantified and can be analyzed and provides different insight. By creating survey form, we collected data for the research subject. Then tried to use different tools while experimenting how effectively it could work.

PUBLIC SURVEYS:

Public survey:

After creating the survey form, we shared it with many people to gain insight into AI in art. We then analyzed the data to find out what people think about AI in creativity.

Questionnaire:

- Are you aware about GAN/DALL-E?
- Have you ever used any art generator?
- Have you ever used any recognition app?
- Have you ever come across any art restoration app?
- How AI technology affects the art industry?
- Do you think AI helps in enhancing creativity?
- Can AI be the future of art?

4. RESULTS:

Here are some results convey the message about AI in art industry collected through survey .
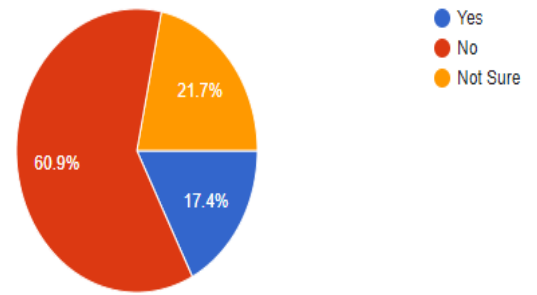
1. Awareness about GAN/DALL-E

Fig.1

When asked about GAN/DALL-E, most people were unaware of this technology. About 17% knew of the existence of such technology. Next, we asked about art generators. People know art generator tools very well. About 85% of people use such tools and find them useful.
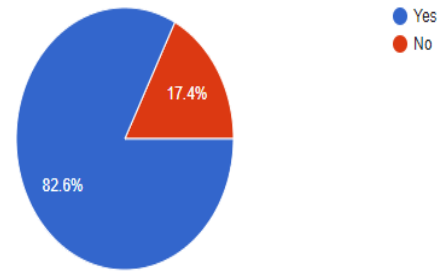
2. People using art tools

Fig.2

Even though unaware about GAN/DALL-E technology people are still using AI tools in large scale. Survey shows that around 83% of people are using AI tools and found them good and useful.
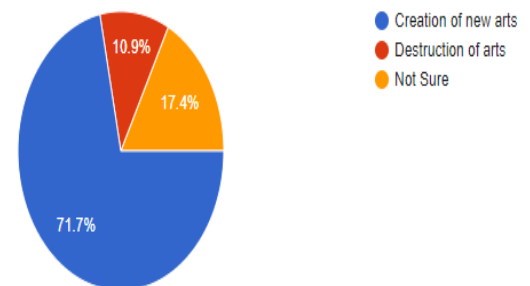
3. HOW TECHNOLOGY AFFECTING ART INDUSRIES?

Fig.3

As per a survey, many people think that AI helps in creation of new arts. It also helps artists by assisting them to explore the advantages of AI tools. The impact of AI is

good on people on creative thinking, artistic mode and interactive usage.

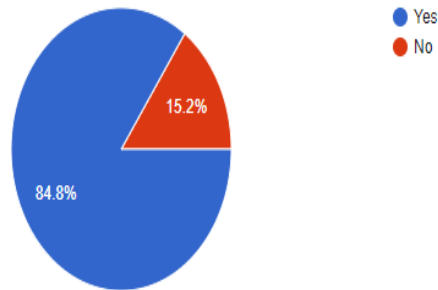## 4. DO AI IS HELPING IN ENHANCHING CREATIVITY?

Fig.4

AI has the ability to showcase different works, and artists are using AI as a tool to push creative boundaries in unprecedented ways. AI frees artists to spend more time doing what they love and being creative. So as survey shows 84% people think it helps in enhancing creativity
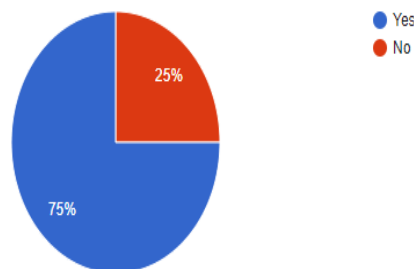
5. CAN AI BE THE FUTURE OF ART?

Fig.5

AI artists have not yet been able to recreate this movement and texture in human drawings. But AI algorithms have the potential to learn faster in the digital world. We believe the future of AI in creativity is bright. We truly believe that artists can use AI and ML to explore new things and make a big difference in the art industry. So far this survey shows 25%people are not agree that AI can be the future of art but 75% people believe that it can possible.

EXPERIMENTATION:

DALL-E is an AI system that has been designed to create new images from a various combination of text .For example "a oil painting of humanoid robot playing chess

".There are other text-to-image systems (such as VQGAN+CLIP and CLIP-Guided Diffusion, token-based programs available at NightCafe), but the latest version of DALL-E is much better to produce consistent images. Excellent for Technology seems to have a good understanding of the world and the relationships between objects. DALL E can create beautiful images that showcase the power of AI.

We tried to generate some image merely trough some combination of words such as:

Text:"A Bowls of soup that look like a monster knitted in wool"

Generated image:

Fig.6

Text:"A painting of fox in the style of starry nights"
Generated image:

Fig.7

Text:"A astronauts playing balls with cats in space"
Generated image:

Fig.8

It's hard to believe that all the images on this page were generated by AI other than the text prompts you see, but it's true! The images on this page are an example of what DALL E AI can do. DALL-E is real and a glimpse into the future of creative AI.

AI is capable of giving retouch to this old photo with much less effort than it would have taken in the past. It's absolutely mind-blowing how much artificial intelligence has come to play a central role in photography. One of the classic examples is DALL-E2.

Restoring old photos using DALL-E2

Fig.9

AI Engine for art authentication and forgery detection- This task lends itself particularly well to computer analysis via neural networks (computer algorithms best suited for investigating patterns). Convolutional Neural Networks (CNNs), developed for analyzing images, are used to great advantage in a variety of applications.
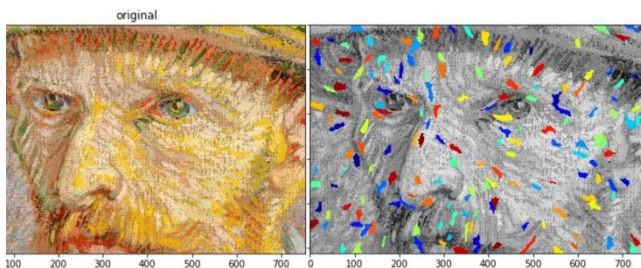

Fig.10

FINDINGS:
- People are unaware of this technology
- Apart from being unaware still willingly uses AI tools in vast range.
- AI tools help artist to produce arts more creatively

- It helps in solving real world problems
- AI can never replace artist. It will remain as a tool.

5. CONCLUSIONS:

Day by Day progress in artificial intelligence has led to the development of new algorithms and high-performance tools. This new relationship between humans as tools and artificial intelligence offers artists new perspectives for creation and reflection. AI makes artwork design and production easier, making previously unimaginable possibilities accessible to everyone. The growing availability of large collections of digitized artworks has given rise to visual arts. Future of AI art also depends upon how effectively humans use this tool.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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