Artificial Intelligence a Changing Face of Fine arts and Design Industries

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Introduction

Art has crossed all boundaries, human have extend their creative capabilities since the Stone Age. Technology has a major impact on the arts. Advancement in technology allows the artist to create a piece that can now be seen and appreciated all over the world. But in the last decade, Artificial Intelligence and machine learning has transformed our ability to create more than any time before in history. These new technologies not only open new possibilities, but also pose important questions about how we will interact with technology now and in future. Now we are in the era where art and technology take us to melding art with machine learning. Also disrupting the status quo of the traditional art world, and exploring our complicated relationship with machine. Today artist are using Artificial Intelligence to push the boundaries of creativity and investigate the implication of AI on society, art and culture.

What is Artificial Intelligence?

Artificial Intelligence is one of the dominant technologies in many fields and industries now days, and it is often associated with the future of the world. As the word itself says Artificial means Non-natural or Synthetic and intelligence means brainpower or brain so it means non- natural or artificial brain power in machine. In computer science the term artificial intelligence refers to any human- like intelligence exhibited by a computer, robot, or other machine. "In popular usage, artificial intelligence refers to the ability of computer or machine to mimic the capabilities of the human mind, learning from examples and experience, recognizing objects, understanding and responding to language, making decisions, solving problems and combining these and other capabilities to perform functions like a human might perform, such as greeting a hotel guest or driving a car." [1]After decades of being relegated to science fiction, today, AI is part of our everyday lives.

Artificial intelligence, machine learning and deep learning

The relationship between artificial intelligence (AI) machine learning (ML) and deep learning (DL) is as follows:

Artificial Intelligence:

"Artificial Intelligence is basically the mechanism to incorporate human intelligence into machines through a set of rules (algorithm). AI is a combination of two words: "Artificial" meaning something made by humans or non-natural things and "Intelligence" meaning the ability to understand or think accordingly. Another definition could be that "AI is basically the study of training your machine (computers) to mimic a human brain and its thinking capabilities. AI focuses on 3 major aspects (skills): learning, reasoning and self-correction to obtain maximum efficiency possible." [2]

Machine Learning:

Machine Learning is basically the study/process which provides the system (computer) to learn automatically on its own through experiences it had and improve accordingly without being explicitly programmed. ML is an applicationor subset of AI. ML focuses on the development of programs so that it can access data to use it for them. The entire process makes observations on data to identify the possible patterns being formed and make better future decisions as per the examples provided to them. "The major aim of ML is to allow the systems to learn by themselves through the experience without any kind of human intervention or assistance." [3]

Deep Learning:

"Deep Learning is basically a sub-part of the broader family of Machine Learning which makes use of Neural Networks(similar to the neurons working in our brain) to mimic human brain-like behavior. DL algorithms focus on information processing patterns mechanism to possibly identify the patterns just like our human brain does and classifies the information accordingly. DL works on larger sets of data when compared to ML and prediction mechanism is self-administered by machines." [4]

Origin and history of Artificial Intelligence:

Artificial Intelligence is not a new word and not a new technology for researchers. This technology is much older than we can imagine.The history of artificial intelligence is 100 years old.*"The first work which is now recognizing as AI was done by McCulloch and Walter Pitts. They proposed a model of Artificial Intelligence in 1943. McCulloth and Pits showed that any computable function could be computed by network of connected neurons."* [5]*"In 1949, Donald Hebb modified the connection*

strength between neurons using a simple updating rule what is known as Hebbian learning even today."[6]"Artificial Intelligence was formally born in workshop conducted by IBM at Dartmouth College in 1956."[7]"Mc Carthy coined the term Artificial Intelligence.*In 1952-69, Newell and Simson wrote General Problem Solver (GPS) in IPL. This program imitated the way human solve the problems."[8]*The first AI winter in 1974-80 is refers to the period where scientists delt with server shortage of funding from government. Then in 1980-81 "Expert System were programmed that emulate the decision making ability of a human expert. In the year 1997 IBM Deep blue beats world chess champion, Gary Kasparov. In year 2006 AI came in business world, companies like Facebook, Twitter and Netflix also started using AI. Now AI has developed to a remarkable level.

The global impact of AI:

Artificial intelligence is now controlling across every industry in transformative way.The entire world of technology is debating the significances of Artificial Intelligence and the part it is going to play in shaping our future. In fact it is already having an enormous impact on us. It is affecting our decision and our lifestyles every day.

· Today most of us are using smart phones and we use it almost all the time. So knowingly or unknowingly we interact with AI. AI work as smart assistant in our mobile. We use it in two ways firstly the obvious AI element which most of us have knowledge about. Smart assistant like Google assistant, Alexa, Siri or Bixby we know these assistant are based on AI. But when we use features like portrait mode effect while shooting a picture, we never notice that AI might be behind that. Google Pixel phones or iPhones can captures such great portrait shots because of AI. AI is going to play major role in coming years.

· Smart Cares and Drones are other example of AI technology and manufactures are working on it, we already using semi-automatic cars. Tesla cars are prime example of how the AI is impacting our daily life. Many ecommerce companies' heavily investing in drone delivery program. All over the world Militaries are using successfully drone program for security.

· Social media feeds are another example of AI. Most of us are using social media Facebook,Tweeter,Instagram or Snapchat or any other social media app. In Social media most of our decisions are being impacted by Artificial intelligence. From the feed that we see in our timeline to the notifications that you receive from these apps, everything is curated by AI. AI takes all form our past behavior, web searches, interactions, and everything else that you do when you are on these websites and tailors the experience just for you. Artificial Intelligence make app addictive that viewers come to it again and again.

· AI also impacts our lives is the music and media streaming services that we are using on a daily basis. While using Spotify, Netflix, or YouTube, AI is making decisions for us. The recommended videos section has become so good at knowing my taste that it's scary.

· The video game industry is probably of the earliest adopters of AI. AI is use to generate random levels for people to play. In games like PUBG or Fortnitea single player plays in story mode, then the player is playing against AI bosses. If playing racing games, they are racing AI bots.

· To advertising Industry is also have big boom with AI technology. The biggest users of Artificial Intelligence are the online ads industry which uses AI to not only track users' statistics but also serve us ads based on those statistics.

· Navigation and travel is another field of AI.Our life's are under the influence of AI on daily basis.Google or Apple Maps are now used for navigation, or sometimes calling an Uber or booking a flight ticket, these appsuseAI. So this is the way AI helps to reach from one point to another.

· The banking and finance industry plays a major role in our lives. In this era money runs our life's and banks are the essential figure that regulates the flow. Bank for various services like customer service, fraud protection, investment etc. depend on AI. Bank sometimes send us automated emails those are simple example of AI.

· Many smart home devices that we use in our daily life use Artificial intelligence to learn our behavior so that they can adjust the setting themselves to make the experience as frictionless as possible for us.

· The smart keyboard apps keep a tab on the writing style of a user and predict words and emojiaccordingly, typing on the touchscreen has become faster and more convenient. AI also plays a vital role in pin-pointing misspellings and typos.

· Smart speakers are big success for technology. The smart speakers not only control smart home devices but also do several things like sending messages, reminder setting, getting the latest news and weather report. Smart speakers like Alexa are probably the most overt examples of use of AI in our life.

· The use of artificial intelligence has given a new dimension to healthcare.AI-powered machines, helps in detecting disease and diagnosis.

· E-commercecompanies take advantage of AI to deploy chatbots to collect pivotal data and also predict purchases to create a customer- centric experience. Like Amazon, eBay.

· AI also helps in categorize emails in your inbox. It makes the most to get rid of spam messages and also categorize emails.

· Ai in various ways impacts our daily life. In using smartphones or surfing the internet, or buying products online, suing navigation, wasting time on social media or listening to songs on our favorite music streaming service, AI is impacting our choices.[9]

AI Stimulatescreativity:

"Artificial Intelligence also plays a vital role in art and design work. The deference between machines and human is that human mind is creative. But now technology is working so fast and smart that now it helps to boost creativity for artist and designer. It takes care of some usual work that saves time and efforts for the designers to spend time on idea building. The idea of machine doing art with its intelligence is received with both excitement and also with anxiety. It is said that we are in the infant stage of next major art movement and we are also not sure that machine can access creativity like humans. As we all are in lots of question marks with AI generated art. Here comes a deluge of questions and unexplored territories concerning authorship, ownership of work, and whether process is more important than the finished product."[10]

What is AI Art?

Unlike the natural intelligence displayed by human and animals Artificial intelligence is intelligence demonstrated by machine. "*Major art movementsin history like Impressionism, Cubism, Fauvism, Pop art etc. are in different eras of art like Neoclassicism or Romanticism. So now we are at the art period or movement that is Artificial Intelligence and computer-generated art is making its way into human culture. Graphic designers, programmers and even software developers might be the Michelangelos, Pablo Picassos, and Andy Warhols of the 21*[st] century."*[11]

We all are aware with digital art or paintings, it not new for us. For the past few decades, artist have used computer to make art work. They create it by using different software of designing like Photoshop, CorelDraw, Illustrator and many more. Now in recent years, artist creative visions have grown with the capabilities of technology, evolution of computer- generated art. These are different with digital art or painting, artist feed artificial intelligence algorithms which machine use to learn and create by themselves. To understand the difference between computer- assisted and computer-generated art, we can think as we wanted to use technology to help us in creating a visual art piece. We use digital technology computer hardware and software as a tool to create art piece. All of the conceptualization and design work is done by us, but it become easier by using these digital tools.

But if want to made computer generated work of art, we have to feed the artificial intelligence an algorithm we planned, like art style and possible picture of nature or other artwork. The AI would analyze the pictures in order to learn what shapes and colors should use. Then it would produce random images, compare them to the ones we supplied, and accept or reject its creations. It repeats this process until the artist makes a final selection of the curated image. AI art has lots of potential and can be used in more than just the fine arts.
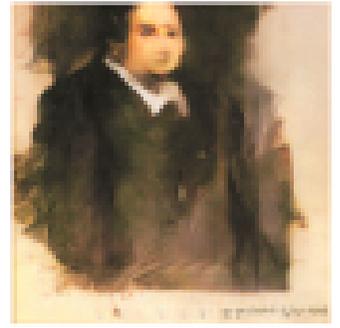
"*AI art refers to any artwork created with the assistance of AI. It includes works created autonomously by AI system and works that are collaboration between a human and AI system. In October of 2018, Christie's auctioned off the first work of art ever created by an algorithm. The painting, titled* Edmond de Belamy*, was a portrait of a gentleman dressed in black. It was expected to sell for around $10,000, and instead $432,500 and becoming the first piece of Artificial Intelligence art sold at a major auction house, Christie's said. At first glance, "Edmond de Belamy," the portrait of a gentleman dressed in black and framed in gold, could be any standard portrait from the 18th or 19th century. This AI art work surprised the art world. The "artist was an algorithm used by the Paris-based collective Obvious. Member of this collective fed thousands of images into a computer, which then used what it had learned to create an original image."*[12]

Examples of AI Arts

Artist and industry professionals believe machines cannot produce the same sort of creative ability as humans. Theysays

Fionela Denaci – ART AI
Sold for $44

Edmond de Belamy – Obvious
Sold for $432,500

to create and manipulate different forms of art in a new and effective way. Artists are utilizing technology to push creative boundaries, whether it is through conceptualizing work of art or building off an existing piece.

A "new" Rembrandt portrait is actually the creation of a 3-D printer — and a statistical analysis of 346 paintings by the Dutch master.
Robert Harrison/J. Walter Thompson Amsterdam

Thompson Amsterdam
Music and Dance with AI

AI has been used in music for decades. Music generating algorithms have the ability to inspire new songs, helping to create a theme for lyrics. *"Algorithms are able to help musicians understand what audiences want, and then predict more accurately which songs might be a hit."*[17]
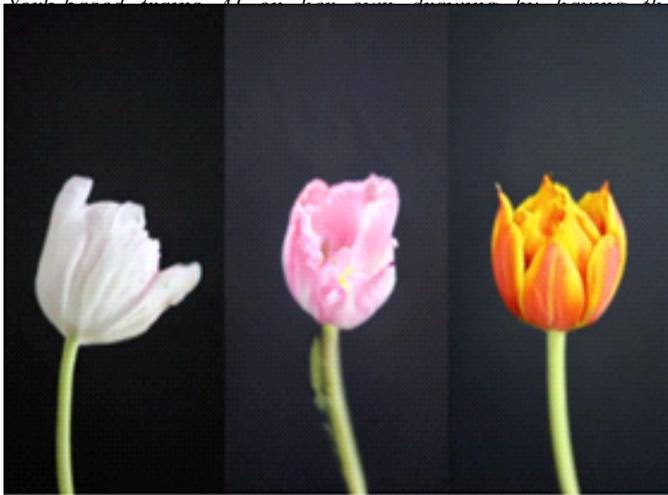*"The world's first album composed and produced by AI was unveiled in 2017. The album features an artist known as "Amper", an artificially intelligent music composer, producer, and performer developed by a team of professional musicians and technology experts. The artist was created to work specifically in collaboration with human musicians, but the chord structures and instrumentation are determined entirely by artificial intelligence."*[18]

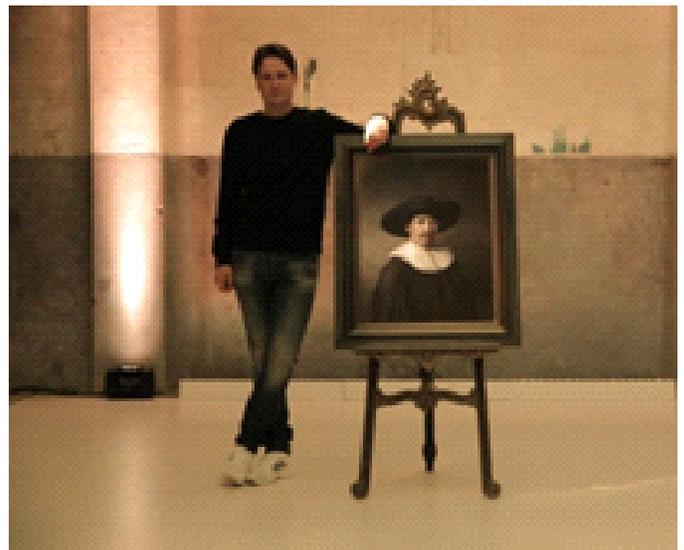Artist Sougwen Chung works in her Brooklyn studio.
(Celeste Sloman for the Washington Post)

AI expands human creativity. *"An artist Sougwen Chung, New York based, trains AI on her own drawing by having the [...]*

develop a work of nearly 150 million pixels. Instead of painting the portrait on a canvas, however, the program manufactured the entire painting through an additive process of layers of materials. This was the brainchild of Bas Korsten, creative director at the advertising firm J. Walter Thompson in Amsterdam."[16]
Bas Korsten, executive creative director of the J. Walter Thompson Amsterdam agency, stands with the painting at its unveiling Tuesday in Amsterdam. Robert Harrison/J. Walter
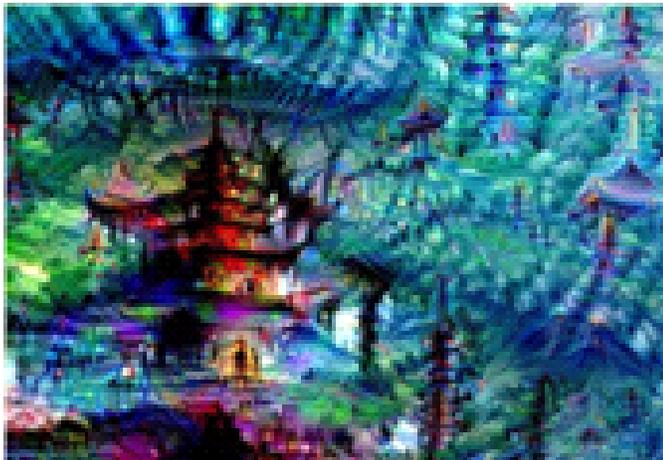
AI or Algorithms are not new to the dance world also, but choreographers are developing even more ways to use AI to keep performances

Pindar Van Arman invented Cloud Painter, and created robots that paint for more than ten years using AI, robotic arms and 3D printing.

Some example of AI Art from Art AI gallery
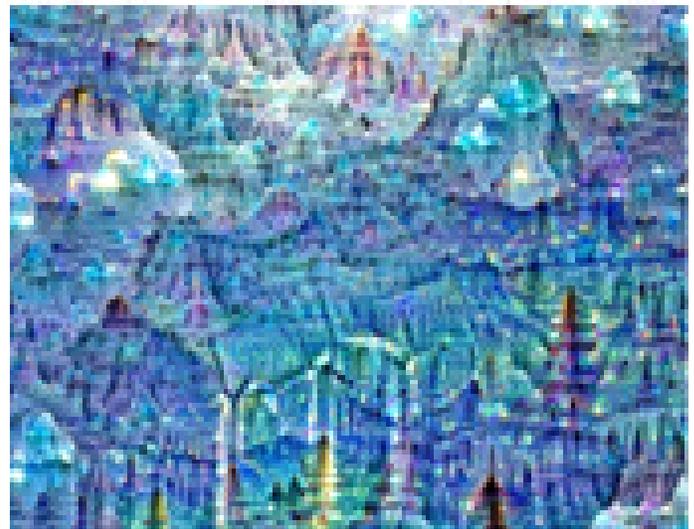The AI changes how we define creativity

fresh and innovative. Award-winning British choreographer Wayne McGregor explores ways to introduce artificial intelligence to dance. To do so, he uses an AI-driven machine that can generate its own independent choreography based on hundreds of hours of video footage it has been fed. The machine can anticipate gestures, learn, and ultimately recreate a dancer's style.

AI Art transforming art and DesignIndustry

New technologies, Artificial Intelligence are drastically changing the nature and process of creativity. Computer plays very important roles in creative activities like music, architecture, fine arts and science. Indeed, the computer is already a canvas, a brush, a musical instrument, and many more. Today it is believe that we must aim at more ambitious relations between computers and creativity. The art forms are created by artist with the help of computer so rather than just seeing the computer as a tool we could see it as a creative entity. This view has now started a new subfield of Artificial Intelligence known as Computational Creativity.

AI technology does not threat an artist in danger. It provides opportunities to develop new media, expositions, and markets. Many artist and designer fear that relying on machines will hinder the essence of art and could lead to replacing humans as creators, but on the other side AI artist feel that machine

generated art is a new opportunity and the process is becoming an art from in itself. Famous artists from the past years as we know there work was informed by concurrent social and political issues, so now Artificial intelligence, working in conjunction with humans, and has the ability to create art through those experiences as well.

AI is no longer the imaginings of a science fiction novel. It is a part of our everyday lives, and it is used by businesses and retail outlets to improve customer service on a regular basis. Now it can be seen in creative industries, such as in marketing and design. Art industry is one of the industries where AI can be seeing rise in popularity most specifically art itself.
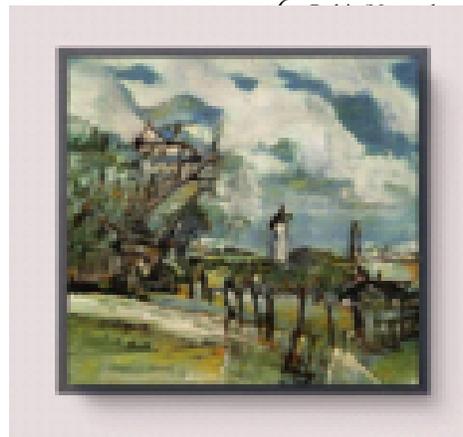
Conclusion

Today the world around us is shifting from traditional to digital. The art are taking this step towards the digital world as well. The combination of art and technology is becoming more and more of a common concept. There are more developer as artist and artist as developers. If l**ooking to the Future**It's possible that digital art could be next major art movement. Maybe in the next century students will learn about the AI art movement just as we learned about 18th and 19th century art periods. We may even create a greater need for artificial intelligence in art, and in life, which could spur further technological innovation.Any artwork created by the combination of neural nets and humans can produce unique results that do not have to replace human creativity. Artists are essentially creative. But an artist can sometimes feel themselves running out of truly groundbreaking ideas, especially in today's age of technology and the fast pace of the world. *"Using AI can help artists to come up with new and exciting ideas for their work, allowing them to create something they never thought of before.Many people are afraid that AI will cause the loss of their jobs, but this is not so"*[19]. At this point in time, AI and machine learning are being used to enhance and expand the artistic process rather than take it over. New techniques and methods are being learned, especially by younger artists and technology is being embraced more and more in the art world.**Reference**
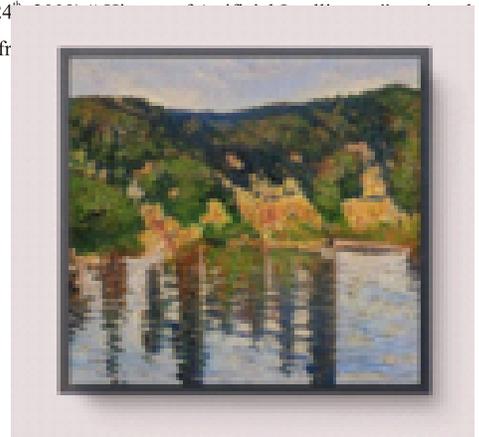
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Abstract art

Surreal art

Nature art

Humans

Flowers

Fauvism

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