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**THE IMPACT OF ARTIFICIAL INTELLIGENCE  
ON THE ART MARKET**

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## **Abstract**

This thesis examines the impact of Artificial Intelligence (AI) on the art market. As AI continues to advance rapidly, it affects many areas of our lives, including the world of art. It explores into how our perception of AI changes, how AI is received, and sold. The benefits and challenges of using AI are discussed as well as its potential future. Furthermore, this paper analyses the impact of AI on the art market, including changes in the art creation process, the emergence of new business models, and shifts in the dynamics of existing art processes. The research suggests that while AI presents exciting opportunities for artists and collectors, it also poses some significant challenges and raises ethical questions about the role of technology in art.

**Key words:** artificial intelligence, art market, art restoration, art conservation, new art practises, digital world

## **Abstrakt**

Tento text zkoumá dopad umělé inteligence (AI) na trh s uměním. Jak se AI rychle rozvíjí, ovlivňuje mnoho oblastí našeho života, včetně světa umění. Tento článek zkoumá, jak AI mění způsob, jakým vidíme umění, jak je AI přijímána a prodávána. Diskutuje o výhodách a výzvách používání AI a zkoumá potenciální budoucnost. Kromě toho článek analyzuje dopad AI na trh s uměním, včetně změn v procesu produkce umění, vzniku nových obchodních modelů a posunu v dynamice existujících uměleckých procesů. Výzkum naznačuje, že i když AI přináší zajímavé příležitosti pro umělce a sběratele, přináší také značné výzvy a vyvolává etické otázky ohledně role technologie v umění.

**Klíčová slova:** Umělá inteligence, trh s uměním, restaurování umění, konzervace umění, nová umělecká praxe, digitální svět



## Contents

1	Introduction.....	1
2	The impact of AI on the art market.....	1
2.1	Why it is important to talk about Artificial Intelligence?.....	1
2.2	Is Artificial intelligence going to take over the future creative market?.....	2
2.3	The modern definition of AI.....	2
2.4	Authentication and ownership verification using AI.....	2
2.5	Conservation of fine art by AI.....	3
3	AI in service of modern archology.....	5
3.1	Various techniques.....	5
3.2	AI facilitates 3D mapping.....	6
4	Combining LiDAR and photogrammetry in the art world.....	6
5	AI as an author.....	7
5.1	AI-generated art.....	7
5.2	Who is the owner of AI-generated art?.....	7
6	Two advanced technologies working alongside.....	8
6.1	AI in non-fungible tokens (NFTs).....	8
6.2	Biggest assets of AI NFTs.....	9
7	AI-related benefits and concerns.....	9
7.1	AI rush.....	9
7.2	Unobvious presence of AI.....	10
7.3	General-nature problems.....	11
7.4	Can AI be ethical?.....	12
8	Conclusions.....	13
	Bibliography.....	14



## **1 Introduction**

Artificial intelligence(AI) is spreading rapidly across numerous industries. AI development is gaining momentum, and has the potential to change the creative industry forever. AI is used in various fields of art and creative industries, from enhancing artistic mediums to creating entire projects on its own. Contemporary AI can independently analyse data and draw conclusions almost instantly, therefore its efficiency in the creation of complex works of art is unmatched by humans. As AI becomes increasingly integrated into a wide range of complicated processes, it holds great promise for improving performance in many different areas. It allows for the automation of previously labour-intensive and resource-intensive processes on a huge scale. The development and evolution of AI promise to make it even more intelligent and valuable in the years to come, perhaps even beginning to overtake many areas of art and science. AI is the cutting-edge technology of the future, but what it will accomplish is uncertain. I believe a more extensive analysis and discussion of this issue from various angles, is essential, especially regarding the potential ways in which it may impact people's interactions with related industries.

## **2 The impact of AI on the art market**

### **2.1 Why it is important to talk about Artificial Intelligence?**

As AI technology develops, it becomes increasingly important to spread awareness of its possible artistic applications. AI can be used by artists for much more than just creating art; it opens up new ways of expression, thinking, and optimization. There is no doubt that AI has the potential to revolutionize the world of art. Long-form conversations are essential to building social trust in AI, as there is a wide range of informational resources. Automated censorship, unclear copyright infringement, and even the automation of creative processes are just some of the potential consequences of applying AI in the arts, and it is important to be aware of them. Ethical considerations of applying AI to creative endeavours should also not be overlooked. Should AI be used to create art? Would art still be considered as such even if it is not created by humans? Will the sense of creating art be brought down to just the end product? Furthermore, AI can be utilised to improve upon already-established practices and creations. It can help generate new creative ideas and discover underlying patterns in current works of art. To enable artists to make use of AI's potential for creative expression while remaining mindful of its possible pitfalls, it is important to raise awareness of its applications and the dangers they may pose.

## **2.2 Is Artificial intelligence going to take over the future creative market?**

AI increasingly affects the artistic field. From video editing through music composition to fine art restoration, AI revolutionises artistic processes and practices. As AI becomes more advanced, it begs the question of whether it will eventually dominate the creative industry. The answer seems to be ambivalent. While AI has the potential to produce amazing works of art in a fraction of the time it would take a human, it is in its infancy and will not replace humans anytime soon. Successful creative ventures of the future will be a joint effort of AI and humans. Humans can focus on providing the unique perspective and artistic flair that AI can't, while AI can handle monotonous and complex duties. The synergy between AI and human imagination will unlock the future of art. However, there are also risks involved with AI, such as algorithmic bias or manipulation. Therefore, it is crucial that we monitor the progress of AI and ensure that it is used ethically. In the long run, the creative industry as a whole will thrive if we can strike the right balance between AI and human decisiveness.

## **2.3 The modern definition of AI**

The current, more intuitive AI social approximations are guaranteed to fail since they attempt to compare human mental capabilities with artificial ones. [1] This approach to defining intelligence may yield useful results, but it can also lead to excessively narrow and unreliable definitions. The creation of AI should, at best, idealise the pursuit of non-human intellect, and be built on the functioning principles of human intelligence. It is important to note, for the sake of clarity, that it is not right to equate human intellect with its artificial counterpart. How then, the concept of AI should be approached? While "artificial" cannot be equated with "natural," it can be inspired by natural processes and systems. It is just like in the case of first cameras. They were inspired by the human eye, even though they used many mechanisms that naturally do not exist. It is not designed to copy biological tissues but to optimise the systems. On the one hand, AI is intended to mimic the way how neurons and the human brain work, while on the other, it is something non-biological that should be flawless in every aspect. [2] Despite decades of research, the recent surge in artificial intelligence can be attributed to a shift in perspective that has led to a breakthrough. The study of AI based solely on the human brain has been abandoned in favour of applying analytical strategies that work on massive databases.

## **2.4 Authentication and ownership verification using AI**

Authentication and ownership verification procedures are becoming more crucial in the modern era. Fortunately, AI offers a safe and secure alternative. AI authentication employs object recognition in photos and videos. This technology can be used to confirm an

individual's identity or the rightful owner of a specific item. It can be used to ensure that a product is authentic or that a person is who they claim to be. With AI authentication, documents can be checked for accuracy and whether they are up to date. When it comes to verifying ownership and establishing identification, the potential applications of AI authentication are boundless, revolutionising the way we verify the information.

Art-recognition.com [3], a promising AI authentication company gains prominence in the industry. They have a long track record of successful authentications, and the project related to "Self-Portrait" by Vincent van Gogh painted in Oslo [4] is one of the most impressive cases, especially considering that the authenticity of this painting remained in question up until 2019.

Firstly, the team used hundreds of original photographs from the "de la Faille Catalogue Raisonné" to train a deep convolutional neural network, which is a machine learning model that was customised to work with images, to study Van Gogh. Subsequently, the system was supplied with well-known labelled fakes, such as the infamous Wacker forgeries, to improve its ability to detect forgeries. Due in large part to the abundance of high-quality photos needed for AI to learn, Van Gogh's training continues to be one of the most stable and reliable models generated by AI systems. Based on its 97% confidence that the Oslo Self-portrait is genuine (which turned out to be correct), AI is now well prepared to authenticate any other works by Van Gogh. This example of authentication is promising when it comes to reducing the cost and time in future recognitions. Especially, when the system achieves such great results only using photographs of art works while only needing to be feed from database of artist's works.

## **2.5 Conservation of fine art by AI**

The field of art conservation with its long history is currently undergoing some very interesting AI-related development. [5] This technological advancement has had a significant impact on both the art conservation industry and the general public's perception of the importance of preserving priceless works of art. AI has enabled conservators to retouch artwork without actually touching it, using algorithms and digital brushes to restore colours and forms to their original states. AI-based sensors can be used by conservators to monitor the condition of the artwork. By integrating AI into the conservation process, conservators spend less time and effort on routine chores and consequently, they can focus on intricate tasks. Moreover, AI can be used to ensure that the artwork is restored to its original condition while reducing the number of mistakes that occur throughout the conservation process. Therefore, conservators and art enthusiasts alike will benefit from the use of AI in art conservation as it will help to keep priceless works of art in pristine condition for much longer.

"Operation Night Watch"<sup>6</sup> was one of the most notable conservation efforts in recent years, made possible due to the employment of AI technology. Once the project had been completed, the original 1642 version of Rembrandt's masterpiece "The Performance of the Rifle Company of Captain Frans Banning Cock and Lieutenant Willem van Rijenburg", commonly known as "The Night Watch", was recently displayed for the first time in its complete size after over three centuries.

In 1715, this icon of the Dutch Golden Age was trimmed on all four sides because otherwise, it would not have fit in the new hall. Unfortunately, the cropped strips have not been found, but a smaller version of the original painting by Gerrit Lundsden has been preserved. It played a crucial role in restoring the Rembrandt's painting to its original state. Researchers had been collecting X-rays, digital photographs and scanned images of "The Night Watch" for nearly two years. All this data was used to train an AI algorithm to mimic the artist's technique and fill in the missing parts of the original painting. The whole project was successful, and the patched-together artwork is now exhibited at the Rijksmuseum in Amsterdam, the country's largest museum.

With the addition of the two missing human figures depicted on the cropped strips, the painting's focal point and overall energy have changed. Without the the employment of AI generators in the project to fill in the blanks, we would never be able to perceive this painting as the author intended, and our interpretation of it would be incomplete. Thanks to AI, a step change is made in the restoration of artworks that remained irreversibly damaged or incomplete for years.

The progress of creative works can now be tracked and traced with the help of advanced scientific investigation techniques. It is a common practice for even the most talented artists to start with a rough sketch and make countless adjustments as they go. [7] We now have several non-destructive methods (such as x-rays) for analysing visual works. They allow us to uncover how they were created. The use of X-ray technology allows us to see concealed details, such as drafts and revisions, which can be sometimes hard to interpret as in many cases the works were changed many times and therefore overlap with one another. Machine learning algorithms (AI) have been developed for image analysis. They help experts process and understand the data sourced by non-destructive methods.

In what ways AI could assist in the restoration process? To preserve a painting in its original form, it is often necessary to process the data through algorithms to determine the painting's current condition and learn more about the materials and techniques that the artist originally employed. The artist often repainted the same pattern multiple times, which resulted in multiple images overlapping, thereby making it difficult to distinguish between the original and the alternations made by the artist. Distinguishing these patterns is a challenging task,

however, AI can assist in the reconstruction of the various stages of the work, thereby providing greater clarity regarding the artist's creative process.

Artificial intelligence algorithms have been successfully employed in the field of digital restoration, including the restoration of photographs, articles, and manuscripts. The use of such algorithms allows to detect deterioration and digitally reconstruct images of manuscripts (a process called inpainting) as done at Cambridge's MACH laboratory. [8] This technology has significantly improved the precision of the restoration process, while also providing the possibility to view works, which otherwise would have never been seen. Such techniques have been employed to reconstruct paintings that were painted over by the author, demonstrating the remarkable potential of AI in the field of restoration.

Oxia Palus [9] is an initiative run by physicist George Cann, neuroscientist Anthony Bourached, and the artist and mathematician Jesper Eriksson who created a picture that have never been seen before. The image is a previously unknown underpainting of two male wrestlers by Vincent Van Gogh [10] concealed underneath a painting known as "Still life with meadow flowers and roses". It was reconstructed by AI technology and 3D printing from an X-ray image of the painting's backside. According to Mr. Bourached's interview with The Telegraph [11], his team utilised a computer system to analyse Van Gogh's brushstrokes in hundreds of paintings, and then used that data to model how the original representation of the wrestlers may have appeared. Subsequently, it was displayed by MORF Gallery at the Focus Art Fair in the Louvre.

### **3 AI in service of modern archology**

#### **3.1 Various techniques**

Archaeology and the preservation of archaeological sites is and will be affected by AI and its applications. X-ray technology, for instance, is not limited to visual art but has also been used to study and analyse glass, mummies, and statues. Moreover, CT scans and other methods frequently used for image analysis have consistently shown the worth of AI algorithms in this fields. [12]

Archeologic researchers have begun using AI to help them restore ancient artefacts that missing their original text. This technology also helps in the identification of the precise epoch and place of origin for uncatalogued cultural artefacts. As a result, researchers can save time and get more accurate estimates than through a manual examination. Imaging techniques have also been used to reconstruct text on palimpsests, which are parchments or books on which the ink has been scraped off and then rewritten. These techniques have allow us to recover ancient works of art that had been thought to be lost forever. The Archimedes

Palimpsest, which contained two works of Archimedes not catalogued before, was recently deciphered by means of X-rays and AI transcription. [13] This project demonstrated the potential of AI in the field of archaeology in revealing hidden information.

### **3.2 AI facilitates 3D mapping**

There has been an increasing number of archaeologists who use 3D documentation in their research and practice, which has led to further exploration of the use of AI in this field. The next step is to employ AI in 3D mapping, but this technique is still in the development stage. 3D modelling is of significant importance in archaeology and should not be done manually by humans because it is highly time-consuming. Manual LiDAR (Light Detection and Ranging) mapping is just as slow as it was in the past. Therefore, developing a method that can automatically produce maps from point cloud data is the answer to this issue. Davis Dylan, in his ongoing project, works on the accomplishment of this objective. [14]

The use of machine learning combined with 3D mapping can assist in the reduction of the likelihood of future issues at archaeological sites, such as vandalism and crowd damage. However, there are potential risks associated with the advancement of such technology. For instance, the development of crowd control systems based on similar technology could be misused by those in authority and therefore, pose a threat to society. It is alarming that the creators and experts have already hypothesized that such artificial intelligence systems could be used by the military and law enforcement. [15] Therefore, it is essential to consider the ethical implications and potential risks associated with the use of AI technology, and to regulate its use to prevent any misuse.

## **4 Combining LiDAR and photogrammetry in the art world**

Photogrammetry is a science and technology dealing with accurately documenting, measuring, and analysing the world around us based on pictures. [16] Through this process, it is possible to extract and measure an object's geometry, displacement, and deformation from pictures or digital images. Modern photogrammetry systems can produce point clouds, high-resolution digital surface models, photorealistic 3D models, and 3D visualizations. It can be also used in museological practices to render 3D maps of possible exhibitions. Subsequently these maps can be uploaded online to avoid the need of physical presence of curators and artists. This practice is likely to gain popularity in upcoming years.

The recent advancements in remote sensing technology have made it more affordable and accessible, allowing for greater use of 360° cameras, drones, and image-processing software. One of the earliest applications of LiDAR in art is "The Falstone Country Fair" (2013) by ScanLAB Projects [17], which exemplifies the slow birth and growth of point clouds in art

practice. A typical village agricultural festival was photographed in 3D and exhibited on an interactive website where visitors were able to wander around the showground. This showcases the potential for using LiDAR and photogrammetry technology for creative purposes.

## **5 AI as an author**

### **5.1 AI-generated art**

In October of 2018, Christie's house auctioned off the first image "painted" by an algorithm. Almost \$500,000 was paid for a painting depicting a non-existent man - Edmond de Belamy. [18] It was signed with a formula utilised in the algorithm that created this image. Here, the purpose was to demonstrate that it had not been created by a human being. The collective authors of this painting identify themselves as Obvious. [19] Is an AI art the next big thing or just a passing fad, achieving those incredible prices only because it is a novelty? The reception of AI-generated artworks by general public is uncertain and controversial, although the fact of being generated might be helping. While some are sceptical, art critics and modern online galleries are highly interested in an AI-generated art, and the media coverage it is receiving surely add to its fame. Currently many art galleries exhibit AI-generated art, and AI-art becomes increasingly popular at art fair.

AI has been associated with the idea that a transhumanist entity or author from outside the human realm has emerged, one that would rapidly catch up with and potentially outperform human creators. However, this idea is seems to be just a sensationalised apprehension, or the way to create dramatic headline. In reality, AI is likely to remain (at least for a long time) just a tool, which requires human operator to create anything with significant artistic value.

The fact that the initiatives associated with AI-generated art are themselves a type of meta-projects that helps to bring such art to the public surface. Moving away from the idea of teaching the robots to paint was crucial to finding a place for AI in the art world. AI creators leverage the AI-related controversies and myths to their advantage. It is no longer about the art itself but about the discussion and wide variety of reactions concerning the AI art projects. Currently, that might be the biggest driving factor for this segment of art market. It can be compared to modern performative art, where controversy and scandal are often core elements.

## 5.2 Who is the owner of AI-generated art?

Schools can certify that their graduates have acquired specific competencies, but they cannot control or even predict how those competencies will be used in the real world. On the other hand, teachers have no legal ownership over their students' original efforts.

The Next Rembrandt [20] project is a prime example of the exceptional potential of this technique to solve challenging issues. In this project, thousands of paintings by the 17th-century Dutch master Rembrandt Harmenszoon van Rijn were evaluated using a dedicated computer software developed especially for this research. Subsequently, using these paintings as inspiration, the computer painted its own work in a manner reminiscent to the master's style. The final product was novel and original (even though it was influenced by Rembrandt's works) piece of art, therefore it met all the requirements for protection under copyright law. However, there was something crucial missing – human authorship. Since Machines do not have the capacity to enter into contract, they cannot have rights or duties, and therefore do not deserve the same legal safeguards as people do.

Who, then, has legal ownership of the image created entirely by a machine? As more people have access to high-quality research tools, questions of this nature are gradually becoming less theoretical.

The British approach states that if a piece of work was created entirely by a machine, then there is no human author. However, the author of a so generated piece of literature, theatre performance, music or other kind of art, is the individual who performed the steps required to create the work. [21] Typically, it is the developer or an end user of an existing AI model. There are benefits and downsides to this strategy, which is nonetheless one of the more obvious and promising ones. Firstly, the developer of the model is often a team, where each member represents different company and is an expert in one or more steps in the process of developing a practical algorithm. Secondly, this approach ignores the person's role in providing the computer with the data required for learning and feedback. Additionally, the value placed on extremely reliable and clean data acquired on a massive scale by corporations referred to as technical giants is typically determined at this time. More importantly, a system built in this fashion does not identify the individual who initiated the series of events that culminated in the creation of the artwork (although there may be situations when there is no such person, because the impulse to act will come from the machine). Therefore, the process of copyright protection does not represent the involvement of humans in the selection of data.



## **6 Two advanced technologies working alongside**

### **6.1 AI in non-fungible tokens (NFTs)**

What happens if you combine NFTs with another rapidly developing technology like artificial intelligence (AI)? Unlike other digital assets, NFTs can be uniquely identified through their own information and IDs, which are stored alongside the asset on the blockchain. [22] They are used to verify the validity and ownership of physical and digital items. Since their meteoric rise to fame in 2020, NFTs have transformed a wide variety of markets. At the same time, as AI and NFT technology have witnessed explosive development in recent years, the AI ground-breaking developments made it possible to bring this technology into the Web3 [23] sphere. As AI-generated NFT art became one of the most popular types of NFT, several design teams accepted the challenge and began implementing AI models into NFT.

One of the AI NFT initiatives involves incorporating the AI Generative Pre-trained Transformer 3 (GPT-3) [24] model into the smart contract of tokenized assets. [25] The GPT-3 language model is a deep learning-based tool for generating natural-sounding writing. With AI NFTs, characteristics such as animation and interaction with users through input can be included, giving them more life than "traditional" NFTs, which are often presented as static images or audio files. Most NFTs in use today just display pre-made graphics that do not change or respond to the user in any way. The learning capacity of AI NFTs allows it to autonomously produce dynamically shifting events and create new material. The longer these digital assets remain in contact with a certain setting or user, the more information they will gather.

### **6.2 Biggest assets of AI NFTs**

AI NFTs may employ deep learning techniques such as computer vision, speech recognition, and natural language processing to make tokenized assets more dynamic and interactive.

Content creators or project teams may teach AI NFT to respond to specific requests or generate new projects based on user entry data, allowing for continuous evolution of tokenized assets. As a result, it is possible to take advantage of exceptional opportunities and secure for themselves more meaningful methods of interacting with NFT.

One of the biggest advantages of AI-infused NFTs is their versatility and adaptability while in use. This unique feature is exclusive to AI-generated NFTs. In conclusion, AI has the potential to revolutionise the world of NFTs and the art market as a whole. By offering new and innovative ways for artists to create and sell their works, AI can contribute to the development of a more vibrant and dynamic art market. While there are challenges and limitations to consider, the

potential benefits of AI in NFTs are significant. As AI technology continues to evolve, we can expect to see even more exciting and innovative digital art pieces being created and sold as NFTs.

## **7 AI-related benefits and concerns**

### **7.1 AI rush**

Major technology corporations control the AI industry. Since 2009, Google has purchased more than 30 artificial intelligence startups, establishing a vast monopoly of AI technology. These AI companies work on a wide range of projects, from picture identification to more natural-sounding computer-generated voices. While there are other than Google players in the AI market [26], in 2016, the American and Chinese big data giants spent up to \$39 billion on AI research [27], development, and acquisitions, which accounted for approximately 90% of global corporate spending on AI. The acquisition of AI startups by larger corporations throughout the globe is a reason for concern as it gives these corporations significant power over the development of AI. These giants already have stranglehold on user data due to their dominance in search engines, social media, e-commerce, and app stores, and are thus the primary sources of AI for businesses worldwide. This kind of concentration is unsettling because it raises the prospect that democratically elected governments may be forced to give more and more power these massive digital corporations.

Investments in AI are driven by the massive amounts of digital data generated every day. With the shift towards online work, communication on social media platforms, and services migrating to the cloud, a new world of big data [28] has emerged, making it impossible to be ignored. Businesses storing big data gained in importance. Consequently, there was a large outlay of capital on machinery that can sift through the data in search of patterns. Machine learning algorithms thrive in these giant companies because they are educated on such massive datasets. Although, when it comes to collecting data and presenting conclusions based on such data, AI can be useful to the society, problems arise when it comes to whom this data is sold. Here, another debatable aspect is whether this big data filtered by AI should be public information if gathered on public activity of citizens. The primary cause of these problems, and the fundamental cause of the general AI-related problems, is that the models do not take the real world into account adequately. Traditional AI spent a lot of time mapping out abstract virtual worlds within carefully predefined boundaries and behaviours that are fundamentally different from the real world.

As AI becomes increasingly capable of automating human tasks and improving efficiency and accuracy as compared to human performance, there is growing concern about the social

impact. For example, a major manufacturer of autonomous cars has optimistically claimed that eliminating the "human component" responsible for 94% of accidents could save over a million lives worldwide. [29] Given this context, it might be tempting to adopt post-humanistic management practices, which involve giving AI control over staff and the structure of the organisation. Consequently, people may be inclined to blindly rely on AI's judgments in any situation, leading to greater trust in AI than in each other.

## **7.2 Unobvious presence of AI**

AI has become a hidden core of most industries, working its way subtly into both the public and private worlds. It is portrayed as the epitome of progress, providing increased productivity and wealth for some, and absolute supremacy and surveillance for others. It also offers a never-ending supply of low-cost items for the masses. Some see this as a sign of an impending apocalypse, with intelligent robots causing unstoppable disasters. Artists are intrigued by this phenomenon and explore its new applications in various fields of art. Machine learning is rapidly changing the creative process, which was once considered the pinnacle of human sensibility and compassion. The labs of the digital revolution created AI, and it has quickly caught the attention of the wealthy and powerful, who often operate with little to no public scrutiny.

The art market's distortions, the heated disputes about a possible technological singularity, and the commonly misunderstood complexities of the new technology all serve to hide the core of the underlying issue in front of which the whole discussion about AI in art, and the world in general, is taking place. This issue is the widespread and problematic deployment of AI by a number of influential corporations and governments alike. The consolidation of big data, increased processing power, the advancement of machine learning and related technologies, the emergence of new players in the private sector, and the spread of power-hungry governments around the world call for a common understanding across social, cultural, and political spheres instead of fearing a robot taking over humanity.

## **7.3 General-nature problems**

The future of work raised concerns due the rapid advances in AI, and have prompted inquiries into the types of labour most suited for automation. They highlight the potential threat of employment transformations by 2030, indicating that between 75 and 275 million workers (3 to 11% of the average activity) will need to make a career move and acquire new skills. Forecasts vary, with some being optimistic and others negative. [30]

However, the increasing volumes of evidence suggest that many technologists and business people are excluded from foresight opportunities on the future of the American job market. It

is difficult, tough, to put a number on the number of lost work places, and providing people with the skills and support necessary to switch careers in the shift to a more automated society will be a significant issue for many societies. Low-skilled occupations such as secretarial work, building construction, and logistics services are particularly vulnerable to automation. The rapid advancement of various robots and AI has a significant effect on low-wage jobs and hence on the employment prospects of the less educated members of the society. This may result in greater economic inequality and widespread joblessness.

History has proven that economic instability is a major threat to democracies, as it leads people to lose faith in political institutions and feel dissatisfied with life in general. People may become more sympathetic to populist parties as a result of the ways in which AI alters the nature of labour, and may become more critical of liberal democracies.

Research on AI should go beyond merely planning for its future implementation. The new risk reasoning has to be taken into consideration. Will the way people think about security and factor in the possibility of an AI expansion, have far-reaching consequences for humans? The United States and China pursue strategies of dominance in the field of AI, hoping to secure victories in global competition. However, they may be trapped by failing to recognise that the primary strategic gap between their countries is the result of a fundamentally different axiological approach. Each of these nations is more likely to clash over artificial neuron network technologies due to their divergent strategic cultures. Each nation hopes to gain an advantage over the other in the AI race, but they must consider the possibility that their rivalry for AI supremacy would result in the development of a superintelligence that could outperform humans in every area of knowledge.

The advancement of artificial intelligence technology and the creation of a human environment will continue to enhance autonomous systems. However, the United States and China are currently engaged in a technical arms race, which is raising concerns about the proliferation of autonomous weapons. Toby Walsh warns that the use of such weapons could disrupt the existing international order, upsetting the equilibrium that has been maintained since WWII. This development suggests that the world we live in is becoming increasingly unsettling. [31] Furthermore, the deployment of AI technology by the United States and China to gain a strategic advantage over each other creates the threat of an uncontrolled explosion of superintelligence. Such a scenario could have a profound disadvantage for all mankind.

#### **7.4 Can AI be ethical?**

Artificial intelligence is characterized by a cold rationality that directs an absolute and rigid application of universal principles to all individual circumstances. The current wave of AI

adoption might be viewed as a massive societal experiment with unknown outcomes, which will undoubtedly have far-reaching ethical and legal repercussions.

The same may be concluded as regards other significant technical advancements. For instance, the development and widespread use of the steam engine brought about several unintended outcomes. Although at first, it was predominantly used to replace human and animal labour, its application as a drive in the first locomotive ushered in a new era in transportation, commerce, and even warfare.

One of the hallmarks of technological advancement is that we cannot predict the future of technology based on its current state alone. Furthermore, we lack a solid foundation for anticipating the implications of future technical developments based on the social outcomes of earlier phases. A lack of useful historical parallels compounds the issue. While humans possess the capacity for righteousness, machines are limited to the realm of reason. Only a human is capable of recognising and knowing when tolerance has reached its boundaries in certain circumstances and has turned into its opponent, who conspires evil and allows unfair practices. Prudence is a permanent character feature, hence it is only human beings who can be prudent, and depending on the intentions of the users/creators, AI will follow.

## **8 Conclusions**

AI is redefining human labour in the art world. It has the potential to revolutionise the creative process and change our perception of art. While there are ethical concerns surrounding AI, the potential benefits are too great to be ignored. As AI continues to evolve, its significant impact is becoming increasingly evident. Although the full extent of this impact is still unknown, there are steps we can take to prepare for the future. Whether AI replaces human artists or complements human creativity, it is clear that AI-generated art is here to stay. However, it is important to remember that it is a tool to enhance human creativity, not to replace it entirely.

## Bibliography

- [1] Wang, P. (n.d.). *Insufficient Knowledge and Resources — A Biological Constraint and Its Functional Implications*. Temple University, Philadelphia, USA. Retrieved from <https://cdn.aaai.org/ocs/841/841-4278-1-PB.pdf>, page 188
- [2] Wang, P. (n.d.). *Insufficient Knowledge and Resources — A Biological Constraint and Its Functional Implications*. Temple University, Philadelphia, USA. Retrieved from <https://cdn.aaai.org/ocs/841/841-4278-1-PB.pdf>, page 188
- [3] *There is a better way to authenticate art*. Art Recognition. (2023, February 11). Retrieved December 7, 2022, from <https://art-recognition.com/>
- [4] *Vincent van Gogh: "self-portrait"*. Art Recognition. (2021, August 19). Retrieved December 14, 2022, from <https://art-recognition.com/case-studies/vincent-van-gogh-self-portrait/>
- [5] Content, C. (2022, October 14). *Artificial Intelligence in artworks and restoration: Contributing to the Art World*. Artificial Paintings. Retrieved December 22, 2022, from <https://artificialpaintings.com/blog/2022/01/18/artificial-intelligence-in-artworks-and-restoration-contributing-to-the-art-world/>
- [6] *Operation night watch - rijksmuseum*. Rijksmuseum.nl. (n.d.). Retrieved December 22, 2022, from <https://www.rijksmuseum.nl/en/whats-on/exhibitions/operation-night-watch>
- [7] Raieli, S. (2022, October 22). *How ai could help preserve art*. Medium. Retrieved January 3, 2023, from <https://towardsdatascience.com/how-ai-could-help-preserve-art-f40c8376781d>, Artificial intelligence to save human creativity section
- [8] Raieli, S. (2022, October 22). *How ai could help preserve art*. Medium. Retrieved January 3, 2023, from <https://towardsdatascience.com/how-ai-could-help-preserve-art-f40c8376781d>, Artificial intelligence to save human creativity section
- [9] <https://www.oxia-palus.com/> Oxia Palus. Retrieved January 9, 2023, from <https://www.oxia-palus.com/>
- [10] Lawson-Tancred, J. (2022, September 1). *Scientists are training A.I. to reconstruct long-lost underpaintings by artists including Van Gogh and Leonardo da Vinci*. Artnet News. Retrieved January 9, 2023, from <https://news.artnet.com/art-world/scientists-are-training-a-i-to-reconstruct-long-lost-underpaintings-by-artists-including-van-gogh-and-leonardo-da-vinci-2168669>

- [11] Harry Howard, H. C. F. M. (2022, August 30). *UK scientists use AI to bring to Life Vincent van Gogh's original painting of two wrestlers*. Daily Mail Online. Retrieved February 10, 2023, from <https://www.dailymail.co.uk/news/article-11159847/UK-scientists-use-AI-bring-life-Vincent-Van-Goghs-original-painting-two-wrestlers.html>
- [12] Raieli, S. (2022, October 22). *How ai could help preserve art*. Medium. Retrieved February 10, 2023, from <https://towardsdatascience.com/how-ai-could-help-preserve-art-f40c8376781d> Artificial intelligence to dig deeper section
- [13] Kelly, J. (n.d.). *The Archimedes palimpsest: Recovering the lost mathematics of Archimedes*. The Archimedes Palimpsest: Recovering the Lost Mathematics of Archimedes : History of Information. Retrieved February 17, 2023, from <https://www.historyofinformation.com/detail.php?id=3996>
- [14] Davis, D. S., DiNapoli, R. J., Sanger, M. C., & Lipo, C. P. (2020, June 30). The integration of Lidar and legacy datasets provides improved explanations for the spatial patterning of shell rings in the American Southeast: Advances in archaeological practice. Cambridge Core. Retrieved February 17, 2023, from <https://www.cambridge.org/core/journals/advances-in-archaeological-practice/article/integration-of-lidar-and-legacy-datasets-provides-improved-explanations-for-the-spatial-patterning-of-shell-rings-in-the-american-southeast/261AA722182107679799CFBA98FC64E7>
- [15] Ruhl, C. (May 2022 ) Autonomous Weapon Systems & Military AI. Founders Pledge. London, United Kingdom, page 4. Retrieved from [https://docs.google.com/document/d/1fF1FcuhcOxedY-RM6o\\_YM9SM4tQcQWmkvVNk5hjh37l/edit#heading=h.lpgvtmkb0c6u](https://docs.google.com/document/d/1fF1FcuhcOxedY-RM6o_YM9SM4tQcQWmkvVNk5hjh37l/edit#heading=h.lpgvtmkb0c6u)
- [16] Chris McGlone, Edward Mikhail, James Bethel, and Roy Mullen. (2004, January 1). *Manual of Photogrammetry (5th ed.)*. American society for photogrammetry and remote sensing, ASPRS
- [17] Kleder Art and Architecture. (n.d.). *Falstone country show*. ScanLAB Projects. Retrieved March 8, 2023, from <https://scanlabprojects.co.uk/work/falstone-country-show/>
- [18] Cohn, G. (2018, October 25). *Ai Art at Christie's sells for \$432,500*. The New York Times. Retrieved March 8, 2023, from <https://www.nytimes.com/2018/10/25/arts/design/ai-art-sold-christies.html>

- [19] Obvious. (2018, September 26). *Obvious, explained*. Medium. Retrieved March 10, 2023, from <https://medium.com/@hello.obvious/ai-the-rise-of-a-new-art-movement-f6efe0a51f2e>
- [20] Brown, M. (2016, April 5). *'New Rembrandt' to be unveiled in Amsterdam*. The Guardian. Retrieved March 10, 2023, from <https://www.theguardian.com/artanddesign/2016/apr/05/new-rembrandt-to-be-unveiled-in-amsterdam>
- [21] Participation, E. (1988, November 15). *Copyright, designs and patents act 1988*. Legislation.gov.uk. Retrieved April 2, 2023, from <https://www.legislation.gov.uk/ukpga/1988/48/section/9>
- [22] *What is blockchain technology - IBM Blockchain*. IBM. (n.d.). Retrieved April 2, 2023, from <https://www.ibm.com/topics/blockchain>
- [23] Roose, K. (2022, March 18). *What is web3?* The New York Times. Retrieved April 10, 2023, from <https://www.nytimes.com/interactive/2022/03/18/technology/web3-definition-internet.html>
- [24] *Introducing chatgpt*. Introducing ChatGPT. (n.d.). Retrieved April 10, 2023, from <https://openai.com/blog/chatgpt>
- [25] Asset tokenization is the process by which an issuer creates digital tokens on a distributed ledger or blockchain, which represent either digital or physical assets.
- [26] Hurst, A. (2022, December 1). *Google revealed to have acquired the most AI startups since 2009*. Information Age. Retrieved April 12, 2023, from <https://www.information-age.com/google-revealed-acquired-most-ai-startups-since-2009-15415/>
- [27] Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., Henke, N., & Trench, M. (2017, June 15). *How artificial intelligence can deliver real value to companies*. McKinsey & Company. Retrieved April 12, 2023, from <https://www.mckinsey.com/capabilities/quantumblack/our-insights/how-artificial-intelligence-can-deliver-real-value-to-companies>
- [28] *What is Big Data?* Oracle. (n.d.). Retrieved April 15, 2023, from <https://www.oracle.com/big-data/what-is-big-data/>
- [29] According to WAYMO website *Waymo*. X, the moonshot factory. (n.d.). Retrieved April 15, 2023, from <https://x.company/projects/waymo/>



- [30] William E. Halal, J. Kolbe, O. Davies (2016, January) Forecasts of AI and future jobs in 2030: Muddling through likely, with two alternative scenarios, Journal of Futures Studies. Retrieved from <https://jfsdigital.org/wp-content/uploads/2017/01/JFS212Final%EF%BC%88%E5%B7%B2%E6%8B%96%E7%A7%BB%EF%BC%89-6.pdf>, page 91
- [31] T. Walsh,(2007) It's Alive!: Artificial Intelligence from the Logic Piano to Killer Robots, Schwartz, page 192.