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EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE IN THE VISUAL ARTS: A COMPREHENSIVE STUDY

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ABSTRACT

Human thinking first appeared through visual art. From the early cave man paintings to this modern-day AI-generated image and deep learning algorithms, the world has developed. Artificial intelligence (AI) has impacted the visual arts in various ways, and it has influenced more and more as a transformative force in many fields. Through this study, the complex link between artificial intelligence and the visual arts is explained by analyzing the effects, the outcomes, and the future paths. The study explores how artificial intelligence has transformed the production, interpretation, and consumption of art. It also shows how AI algorithms are employed by artists to generate imagery. This study, along with the analysis of surveys, experimental initiatives, and different artworks, explains the impact of artificial intelligence in the world of visual arts. It also tells how artificial intelligence has swayed historical mythology and its sociocultural ramifications. With an interdisciplinary approach, this study integrates the understanding of computer science, art history, and cultural studies and offers a subtle analysis of the profound impact of AI on the visual arts. Finally, this comprehensive study provides an insight on how artificial intelligence has influenced and impacted the visual arts and about the evolutionary technological potential of it in the future by providing a deeper and better understanding of the growing complex link between creativity and technology in modern art practices.

Keywords: Technology, Interdisciplinary, Creativity

1. INTRODUCTION

Everything in this world has its own sense. Nature has created wonders. Plants like Mimosa puica, commonly known as ‘touch me not plant’ or ‘sensitive plant’; get their nickname from the reflex mechanism they use.1 The leaves of the plant turn inward when they come into contact with anything, like when it is touched or shaken. So even plants exhibit the act of sense. We humans have six senses, and each sense has its own mechanism and properties. Humans, using their senses, understand the world and express it in the form of art. When it is visually done, it is visual art. Human thinking was expressed through the arts. Visual arts intertwined

with music, dance, and other forms of custom have led to an understanding of different human ways of thinking. Initially, they painted in caves, and to communicate with one another, humans developed sign languages and so on. The cognitive thinking and processes of a human were expressed through art, or, to simply say, early man communicated through art. We get to know about their lifestyle and the way they lived through the art they left for us to see and learn. Through this, humans have developed in various fields and technologies. All of them have art as their core element. One of them is artificial intelligence. Artificial intelligence, being part of computer science, involves growing computer-based software and technologies that make human thinking easier. This study provides information about various domains present within AI and how AI has impacted the world of visual arts.

2. HUMAN THINKING AND THE ART

Humans, with the help of their brains, process things through cognitive thinking, which leads to the development of new ideas and thoughts in various fields. Cognitive thinking is done with the help of the six senses that a human has, such as sight, smell, hearing, taste, touch, and consciousness.2 Activities that humans do in their daily lives, such as walking, eating, and sleeping, are done with the help of the senses present. Even though there are different types of species present on earth, it is humans who are the creators of art. Art was initially used for their day-to-day lives.3 they expressed their culture and traditions through their art. Each ethnical group has its own form of art. Some expressed it through music and dance, and some through paintings.[4]

3. AN OVERVIEW OF THE INSERTION OF AI AND VISUAL ARTS

The convergence of AI and the visual arts represents a growing and powerful domain in which creativity and technology intersect, leading to innovative forms of artistic expression.5 This crossover was made possible by the emergence of new art forms; it has led to the transformation of traditional processes and changed the boundaries defining the artist and the art.6 The integrations with AI software and technologies have helped us to explore the aesthetic experience and the engagement between narration and construction, leading to an interactive engagement.

4. ART IN ANCIENT SCRIPTURES

The first three lines of Kambar Saraswati Anthaathi, a hymn to God, indicate that art is expressed through sixty-four different kalas.

Āya kalaikaḷ aṟupattu nāṉkiṉaiyum ēya vuṇarvikku meṉṉam'mai - tūya vurup paḷiṅku pōl vāḷeṉ uḷḷattiṉ uḷḷē yiruppaḷiṅku vārā tiṭar.7

Indian ancient texts like the Kama Sutra and the Arthashastra also explain the sixty-four different kals. In Tamil, they are referred to as 'Aaya kalaigal arupathu nangu' They are grammar (required for verse and prose), style (required for verse), calligraphy, mathematics, Vedas, history, law (local and foreign), astrology, tenets of righteousness, yoga, religious invocations, interpretation of omens, sculpture, medicine, anatomy, ancient epics, Etiquette, Presentation, and Bearing Gentle speech, drama, Percussion Instruments (nadam), Percussion Instruments (mrudhangam), String Instruments, Wind Instruments, Ability to discern various

sounds, Music modes, music critiques, Archery, Kanaga Paritchai, Chariot driver, elephant rider, Equestrianism, Gemology, Geomorphology, Warfare (strategy, tactics, and code of war), wrestling, trapper, Seeking positives in negatives, technology, Appreciation of Paganist arts, Ability to Tame Temptations, Secrets of Charming, Alchemy, Preceptiveness, Kavuthiga Vaadham, Palmistry, Kaluzham, Stoicism, Knowledge of Clairvoyance, Knowledge of Levitation, Knowledge of Instellar Travel, Thannurukarathal, Knowledge of Astrasl Travel, Knowledge of Celestial Magic, Sleight offhand (aka magic), Fire tantras, water tantras, air tantras, third eye (sight) tantras, sound tantras, flow tantras, lifting the veil tantras, Katka thambanam, and black magic Painting, sculpting, and architecture are important for this study.

4.1. PAINTING

People have been influenced by artwork for a very long time. Early humans painted depictions of their daily lives in caves, and as the decades and centuries went by, individuals began painting as a decorative art form within their dwellings. Pigment applied (typically) to a two-dimensional surface.

4.2. SCULPTING

When people initially tried to grasp the concept of three dimensions, sculpture emerged. Stones with sharp edges were used to carve them before chisels were invented. After carving them for decoration, they began to worship them.

4.3. ARCHITECTURE

The art that involves constructing buildings is coined as architecture.

Significant excavations occurred in Tamil Nadu in 2019 and 2020 at four important sites, including Keeladi, Kodumanal, Sivagalai, and Adichanallur.8 Bricks, tiles, accessories, pottery, and other items and structures have all been discovered throughout the excavation. Regarding our subject, the finding of painted pottery suggests that prehistoric Tamil people were aware of paintings. With the discovery of jewelry accessories, small tools like blades and scrapers, and walls made of brick, we are able to conclude that they were knowledgeable about architectural design and sculpting even 3000 years ago. The first art forms to emerge are the cave drawings, according to the chronology of art history. In the fifth century A.D., wall paintings started to take shape in the Ajanta and Ellora caves. Amazing architectural works featuring Chalukyan art were discovered in Badami. Later, the art evolved into structures like temples, which are places of worship.

5. DEVELOPMENT OF ARTIFICAL INTELLIGENCE

It was John McCarthy who coined the term AI.9 Recent developments in machine learning and deep learning algorithms have led to advancements in robotics and natural language processing. Artificial intelligence (AI) has transformed industries like cinema, animation, and economics completely. With this development, some social and ethical issues arose. The world of AI is not small. It has pages of chapters that had to be reviewed before coming to a conclusion about our topic. A significant step forward in AI is not promising, which leads to various downfalls in different fields.

6. TYPES OF ARTIFICIAL INTELLIGENCE (AI)

Artificial intelligence (AI) encompasses various technologies, including artificial narrow intelligence (ANI), artificial general intelligence (AGI), and artificial super intelligence (ASI).10

6.1. ARTIFICIAL NARROW INTELLIGENCE (ANI)

Artificial Narrow Intelligence (ANI), sometimes called weak AI, assists with a variety of problem-solving and task-performance activities. It is not capable of thinking like a person, unlike artificial general intelligence (AGI). It is used to make recommendations in a variety of technologies, such as Alexa and Siri. It lacks the flexibility to consider or process the data because it is fully predicated on processed and programmed data.

6.2. ARTIFICIAL GENERAL INTELLIGENCE (AGI)

The technology known as Artificial General Intelligence (AGI), sometimes referred to as Strong AI or Full AI, has the capacity to be programmed with human cognitive functions. It can comprehend, pick up, and use the data from a variety of industries. It facilitates interpretation of spoken language, thinking, and problem solving.

6.3. ARTIFICIAL SUPER INTELLIGENCE (ASI)

In every domain, artificial super intelligence (ASI) surpasses human cognitive capacity. ASI, with its processing of super intelligence, is seen as the AI of the future.

7. TYPES OF AI WITH RESECT TO THE ART

7.1. GENERATIVE AI

It is a type of technology that provides us with a wide range of content, which includes text, images, audio, and other data. Generative AI was introduced in the 1960s in chatbots.11 But only in 2014 did it gain recognition through the Generative Adversarial Network, or GANs, a machine-type learning algorithm. It created high-quality images, audio, and video

7.2. ASSISTIVE AI

It is a kind of artificial intelligence that helps people with many kinds of work. They give individuals with disabilities access to resources such as text-to-speech or speech-to-text systems, as well as screen readers for users who are visually impaired.

7.3. ANALYTICAL AI

Analytical AI, also known as Advanced Analysis or Prescriptive Analysis, is a part of artificial intelligence that analyzes the patterns, trends, and insights of particular data. These, after a few stages of processing, provide the user with actionable recommendations.

There are different types of artificial intelligence technologies that provide users with the needed information. Each one of them provides us with their own significant services.

8. FIELDS IN WHICH ARTIFICIAL INTELLIGENCE IS USED

8.1. VISUAL ARTS

In the world of visual arts, artificial intelligence (AI) as an emerging force, along with a variety of different tools and techniques, has made artists eager to explore them. Alongside with the help of general adversarial networks (GANs), we have created new and quite eccentric networks that are used to generate images and paintings that are beyond human realistic works.12AI content creators allow the users to surf through virtual reality (VR) and augmented reality (AR) by making them understand the complex textures and 3D models, allowing the artist to unify their concepts and expression.

8.2. MUSIC AND SOUND ART

AI algorithms allow the user to understand the different music notes and compositions and help them generate new music ideas. It can create unique sounds and audio beyond the world of traditional music.

8.3. LITERATURE AND WRITING

Poetry, narrative, and content creation are all changing as a result of artificial intelligence (AI). Natural language processing (NLP) algorithms are examples of AI algorithms that assist users in producing, analyzing, and comprehending material that is human-like. These algorithms can only generate articles, stories, and full novels by specifying the necessary content style. By giving the user language that looks human, these technologies create content that is beyond the capabilities of human writers.

8.4. FILM AND ANIMATION

The most significant feature of AI technologies in film and animation is the visual effects (VFX). AI algorithms, along with computer-generated imagery (CGI), enable the creation of characters, environments, and so on. They provide us with uncommon realism and unique visual spectacles from films and animations.

9. FINDINGS

There was a recent issue in 2023 that was raised in the United States.13 The Writers Guild of America (WGA) is the joint efforts of two different American labour unions representing 11,500 screenwriters in film, television, radio, and online media. It says that the Alliance of Motion Picture and Television Productions (AMPTP), which represents over 350 American television and film production companies, has reduced the writer's income compared to the last decade.14 Writers claim that artificial intelligence technologies like ChatGPT should be used as a tool only to generate ideas for scripts, not a tool to replace them.

In recent times, AI-generated art tools such as DALLE-215 have affected the lives of many artists, including Kelly McKernan.16A successful fantasy artist who creates fine arts and digital illustrations and works with clients that include

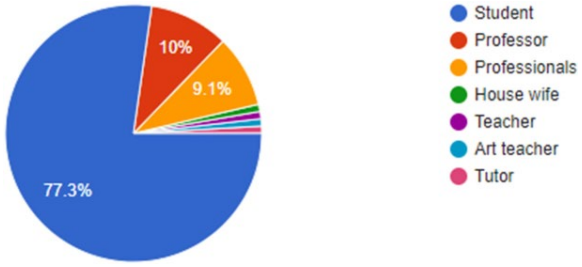
Stranger Things.17 She found out that companies have been feeding her artwork to train AI-based image generators without her consent. She filed a lawsuit against the company for protecting copyrights for her works in January 2023.

Another issue with AI is data collection. So initially, when a user is trying to access a premium feature of an application, it collects the user's data. Some of us, without reading the terms and conditions, accept them. The user's data is not protected. Prisma Labs is an AI art generator that costs $7.99 monthly or

$29.99 yearly to use its premium feature.18 Always check the system to protect your data from being used without your consent.

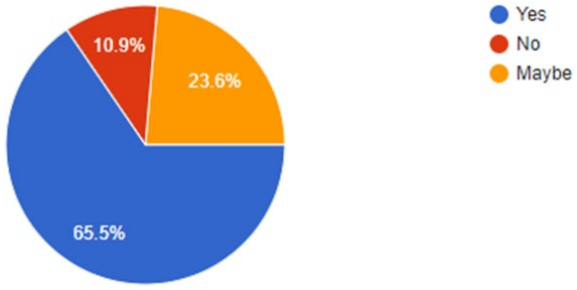
In a survey conducted in India, it was found that about 77 percent agreed that AI will reduce poverty, and about 87 percent agreed that it will improve transportation in the next 25 years.19We conducted online survey based on our topic asking more than 110 people on their knowledge about AI

9.1. DESIGNATION



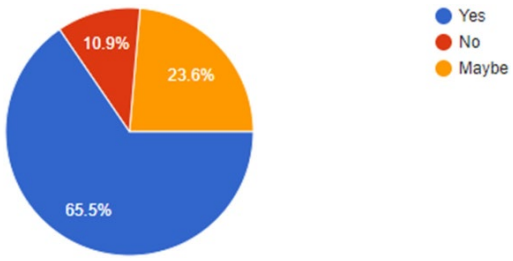
There was an online poll. We questioned over a hundred individuals from throughout India on their expertise of artificial intelligence. Students from various fields, including computer science, electron media, artificial intelligence, and data science, made up about 77.3% of them. Professionals made up 9.1% and professors 10%, respectively. Teachers, tutors, and laypeople all provided about the same number of responses.

9.2. ARE YOU FAMILIAR WITH THE CONCEPT OF AI?



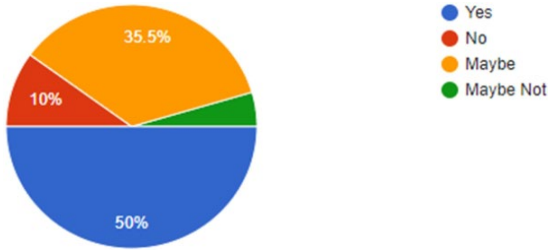
In that roughly 23.6% of them don't know anything about artificial intelligence, while 65.5% of them are familiar with the idea. 10.9% of people do not know what artificial intelligence technology is.

9.3. IN WHICH FIELD AI IS USED?



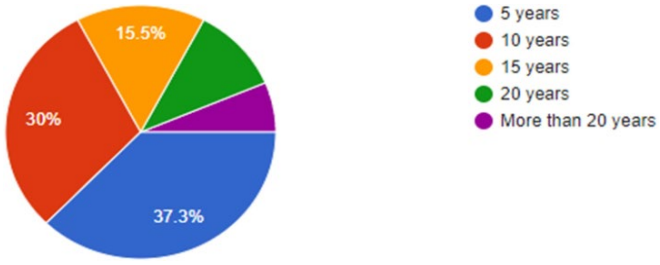
According to the study, the majority of respondents—42.7% and 38.2%, respectively—agreed that AI systems are primarily utilized in the fields of animation and education.10.9% of them said that the film industry was the answer. Only a small percentage of them indicated that it is utilized in hotel administration, with the majority stating that it is helpful in the field of medicine (7.3%).

9.4. DO YOU THINK AI CAN IMPROVE THE LEARNING EXPERIENCE FOR STUDENTS?



Regarding the issue of whether artificial intelligence (AI) enhances the learning experience for students, 50% of respondents, or half of the sample, said that it does. About 35.5% and 4.5% of respondents, respectively, said that it might and might not enhance the students' educational experience. Merely 10% have indicated that it doesn't.

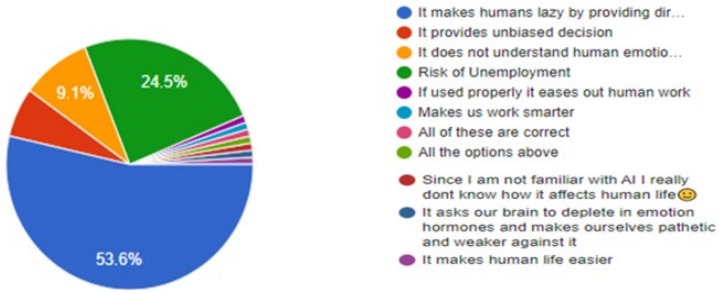
9.5. IT WILL TAKE ALMOST HOW MANY YEARS FOR AI TO REACH COMPLETELY TO PEOPLE?



37.3% of the total stated that it might take five years for AI technology to fully reach out to the public. We can deduce from the study that twice as many

respondents who agreed to 15 years also agreed to 10 years, or 15.5% and 30%, respectively. Some estimate that 10.9% and 6.4% may take up to two decades, or possibly longer.

9.6. HOW DOES AI AFFECT THE HUMAN LIFE?



A little over 53.6% of respondents thought that AI encourages laziness by giving them the answers they need without requiring them to do further research. Of those surveyed, 24.5% felt that there is a chance of unemployment. 9.1% of respondents claim that AI systems are incapable of comprehending human emotion. 6.4% of respondents said they thought AI made impartial decisions. There are various answers, some of which are accurate. And although some claim that artificial intelligence (AI) depletes human emotional hormones, others claim that it makes life easier for people. Still others are unfamiliar with the idea.

From the above survey results, which were asked to more than 110 people, consisting of artists, professors, and professionals, it is clear that most of the people are familiar with the concept of AI, but there is a fraction of respondents who are not quite aware of AI. In the question of which field AI is most used, there are similar responses that it is used mostly in fields such as animation and education. Animation consists of visual art like digital illustrations, character and environment design, and VFX. In education, AI is used for generating information for studies and understanding literature. In comparison with education and animation, cinema uses AI less in its work, according to people. Healthcare uses AI for diagnosing diseases and finding out the cracks and fractures. AI improves the learning experiences for the students. But there are even opinions that they do not increase the learning experience. AI is not completely reaching the people; from the survey, we can infer that it may take more than 5–10 years for that. Even though AI has grown so far, it has its own positive and negative impact on the lives of people. The positive light is that it provides unbiased decisions; there are opinions such as that it makes us work smarter and eases out human work. In the negative light, it is said that it makes humans lazy by providing direct answers 20; it does not understand human emotion, and it may increase the rate of unemployment. Even though AI technologies provide the user with an unbiased decision, at the end of the day, they are totally programmed and do not understand human emotions

10. CHALLENGES AND THE ETHICAL CONSIDERATIONS

10.1. AUTHENTICITY

It refers to the originality, genuineness, and credibility of artworks determined by the AI algorithm. AI- generated artwork blurs the lines between human and technologically generated works.21 It is as if AI itself is an artist.

10.2. AUTHORSHIP

It is the individual responsible for creating a piece of artwork. But when it comes to the AI algorithm, it becomes more complex. There is a concept known as AI anatomy, which refers to whether the authorship of a particular work that is solely done by an AI system should be given to the AI itself or to the human who developed the AI system.

10.3. CULTURAL AND ARTISTIC CONTEXT

The cultural background, traditions, and heritage are also present in the AI-generated art. But sometimes, it may misinterpret the requirements and give different results. Each artwork might evoke different responses from the viewers. Artists must be aware of cultural themes, misrepresentation, and stereotypes while developing AI systems and generating artwork.

10.4. PROFESSIONAL IMPACT

The transformative force of AI may replace the traditional method with graphic design, illustration, and photography. This shift could impact the job professionals in those categories. This may even lead to the development of new job roles such as AI art curator and data artist.

10.5. ETHICAL CONSIDERATIONS AND REGULATIONS:

When it comes to anything with a broad spectrum, it is a must to consider ethical considerations and regulatory frameworks such as property rights, data privacy, and algorithmic bias. AI technologies do not consider the privacy and consent of an individual while using their image

11. FUTURE TRENDS IN ARTIFICIAL INTELLIGENCE

Future advancements in the technology of general adversarial networks (GANs) may allow artists to create highly detailed artworks, enabling them to mimic the human style of work. Personalized recommendations of content according to the user's wishes. This would increase the artist's deep engagement with the artificial intelligence technology. AI-powered augmented reality (AR) and virtual reality (VR) may allow users to interact with the visual art by blurring the boundaries between the real world and the AI world.22. When it comes to AI-assisted art restoration and preservation, AI algorithms may analyze and reconstruct damaged artworks. Future AI-developed technologies may respect the privacy and consent of the individual, avoiding any ethical issues. It may understand the users' requirements without any misinterpretation. Hybrid approaches may combine human ideas and creativity, leading to the creation of new artistic expressions.23 Through automation, computers can perform chores that were possible only for humans, such as data entry, customer service, and driving cars. Many jobs will be replaced by machines, leading to cost-saving businesses, but it may have a negative impact on manual labor. AI is also used in healthcare facilities. With the help of AI-assisted technologies, it is possible to find an accurate analysis.

12. CONCLUSION

The integration of visual arts and artificial intelligence is an important topic that is to be discussed in detail. Artificial intelligence, itself being a very broad domain, has different levels and sectors that are to be understood by the users. From the conducted survey, we can understand that AI, being a technology, has not completely reached the people, and it may take some more years for that. Visual arts, along with AI, transform the whole process involved in producing an artwork. With general adversarial networks (GANs) and AI algorithms, artists are allowed to discover various styles of artwork beyond the traditional method. While adopting the new AI technologies in the visual arts, one should always consider ethical considerations like privacy, consent, bias, authenticity, and authorship. The future of AI in the visual arts will continue to develop, along with augmented reality (AR) and virtual reality (VR). In conclusion, we can infer that AI will continue to grow in different sectors in different forms, leading to more inclusive and artistic innovations. The future of AI is promising, but users should exercise caution while using it. There is a need for both the visual arts and artificial intelligence, as art changes and grows and more types of formats are fed to AI systems.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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