DIGITAL ARTS

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ABSTRACT
The emergence of digital technologies has been impacting disciplines, work lives, research practice, scholarship, teaching, and pedagogy. Technology is fast becoming an indispensable skill for the twenty-first century learning. Digital art is a field where computer or digital technology plays a major role in its production or display. It is an interplay of digital technology, art, and architecture. This paper provides a brief introduction to digital art.

Key words: Digital Art, Computer Art, Multimedia Art, Performance Art

1. INTRODUCTION
Digital technology has been well received by the art schools. It has opened a variety of graphic design software, two-dimensional and the three-dimensional animation design software. Digital technology has greatly transformed arts, painting, drawing, and sculpture. Digital art is an artistic work that employs digital technology as part of the creative process. The art could be an image, print, photo, sound, animation, painting, drawing, sculpture, vision, performance, dance, and theatre. Digital art is also known as computer art or multimedia art [1]. As shown in Figure 1, digital art is an interplay of digital technology, art, and architecture. The date 1956 has been chosen for the birth of digital art.

A digital artist is an artist who uses digital technology is his artistic work. He transforms objects on a computer through variability (changes) and scalability (bigger or smaller). For example, an artist may create many variations of his work on the computer and view them in different sizes on the screen. He creates and shares digital art objects on websites using digital technologies. This assists the artist in gaining recognition for his work and for selling digital art objects for profit [2].

2. DIGITAL ART PROJECTS
These are typical digital art projects [3]:

- Digital painting: This is based on pixels, where every pixel is assigned a color value.
- Digital photography: This includes the process of shooting, manipulating, presenting, and interacting with digital photos. Traditional photography uses light sensitive elements (roll film) that must be exposed, developed and permanently fixed in order to create a lasting and stable image. The digital camera is a popular method of creating digital photographs. Digital photography does not require the use of chemicals to create an image.
- Digital video: Working on a vide may include selecting a part of the video, move, copy or delete it and adding basic effects.
- Digital music: This is similar to digital video except that it allows more features. There are several tools that support importing music from physical mediums and converting it to digital formats.
- Robot painting: This is a painting performed by a robot. Many robot paintings are indistinguishable from traditional paintings. A typical painter was AARON developed by Harold Cohen in the mid-1970s [4].
3. CHALLENGES

Digital art by nature keeps evolving due to changes in technology and software. There is the vexed question of evaluation of digital art. Regular criteria may include originality and novelty, aesthetics, realization, value, and participant engagement. How does one regard a piece of work as art? Does one lose the creator’s idea, emotion, and gesture energy in mass produced objects? The increasing number of objects produced using industrial robots determined loss of the consubstantial uniqueness [5].

Some even question whether “Digital Arts and Humanities” exists as a field. Digital Arts and Humanities is a meta-field that spans across a broad range of disciplines, from History, Performing Arts and Archaeology to Theatre and Linguistics [6].

Teaching the digital arts has been challenging for many educators in America. This challenges arises when educators consider what is relevant to the cognitive achievement of students. Does teaching them digital arts prepare them for the evolving global economy and make them marketplace ready? Works of art can reveal cultural values of a community, and using art to communicate these values surely contributes to the process of civilizing society [7].

4. CONCLUSION

Nowadays, humans have a fascination with digital technologies and digital devices. This human–technology relationship is manifested in all fields of human endeavor. Artists have been involved in electronic media and electronic music from the beginning of the digital era. Computer design software has recently entered the art schools and helped student in their art creation and design.

Figure 1 Digital art is an intersection of art and technology [7]

REFERENCES

[1] “Digital art,” Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/Digital_art

[2] J. N. Curry, “Digital art objects: examining the social aesthetic experience of art and photography on a networked environment,” Doctoral Dissertation, The University of Texas at Dallas, May 2012.

[3] S. P. Christodoulou and G. D. Styliaras, “Digital Art 2.0: Art meets Web 2.0 trend,” Proceedings of the 3rd International Conference on Digital Interactive Media in Entertainment and Arts, 2008, pp. 158-165.
[4] “Computer art,” *Wikipedia, the free encyclopedia*  
https://en.wikipedia.org/wiki/Computer_art  
[5] E. Abrudan, “The Context in the production and the consumption of digital art,” *Journal of Media Research*, vol. 1, no. 15, 2013, pp. 26-36.  
[6] T. Reimer, “Classifying the (digital) Arts and Humanities,” *e-Science 2009 Workshops*, 2009, p. 197.  
[7] H. Choi and J. M. Piro, “Expanding arts education in a digital age,” *Arts Education Policy Review*, vol. 110, no. 3, 2009, pp. 27-34.  

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