

# Digital Art Design Thinking Mining Information Platform Based on Digital Twin Technology

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**Abstract:** A five-dimensional model framework of water resources digital twin is designed, and how to realize the mutual mapping of physical and virtual entities, the operation of the data service platform, and the interconnection of digital twins are expounded. Through the realization of the whole production process of intelligent storage, intelligent processing, intelligent detection and intelligent assembly of seals, the mapping of all elements of people, things and things in physical and virtual space is achieved. The platform can achieve quantification. It has not been trained and solved in the early basic courses, and has not played the role of ladder and progression, so that it is limited in the learning of professional courses. Analyze the reasons for the disconnection between basic courses and professional courses, and then according to the characteristics of digital media art majors, start from the mission of the basic courses of digital media art majors.

**Keywords:** Digital Art Design, Thinking Mining Information, Digital Twin Technology

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## 1. INTRODUCTION

In the design major, there are many basic courses of design and modeling, such as "basic painting", "basic modeling", "design sketch", "design color" and "three major components of design". Then, with the development and popularization of digital media art design [1], it gradually promotes the artistic conception and people's thinking mode to gradually move towards a mixture of perceptual agility and logical thinking. Through the overall planning and coordinated scheduling of heterogeneous energy subsystems such as electricity, gas, cooling, and heat, the integrated energy system can meet the diversified needs of users in the region for power supply, heating, cooling, etc. Renewable energy such as photovoltaics and photovoltaics can be consumed locally [2], which can effectively improve energy efficiency and promote the rationalization of energy structure.

At this stage of development, the fusion of rational development and perceptual cognition exhibited by art design education has gradually become a true portrayal of the entire artistic creation [3]. As we all know, the economic benefits of enterprises, the output quantity of products, and the quality of products are closely related to market demand. For all manufacturing enterprises, economy and final products are the core indicators to enhance the competitiveness of enterprises [4], and the achievement of such core indicators requires the production process maintains efficient security. At the same time, digital twin technology can also be used to create or rebuild digital representations of physical entities. By constructing digital models of physical objects [5], combined with sensor data and model algorithms, the virtual construction of digital twins of physical objects can be used for Simulation, simulation, optimization and prediction of physical entities [6].

The shallow groundwater has now formed the Xiajin-Wucheng and Ningjin over-exploitation areas, with an area of 1221.2 km<sup>2</sup>; all the deep groundwater has been designated as a prohibited mining area. In addition to the increase in extreme weather in recent years, the unevenness of water

resources and the contradiction between supply and demand have become increasingly prominent [7]. Since the implementation of the strictest water resource management system, Dezhou has focused on strengthening water demand and water process control. The optimal calculation of discrete hidden Markov random fields usually has non-trivial solutions. Many optimization methods, such as augmented directed Loop Graph Algorithm, Simulated Annealing Algorithm, Iterative Condition Mode, Multi-loop Confidence Propagation [8].

The inductive method and the deductive method use the unity of induction and deduction to process the various materials collected, analyze, synthesize and compare the digital art works and theoretical viewpoints existing in China from this to the other and from the outside to the inside [9]. The understanding and verification, narrating and explaining it, so as to have a more in-depth and comprehensive understanding of the relationship between design thinking and aesthetic value. As a result, the specific training is ambiguous until the students are promoted to the senior grade and learn the advanced design class of digital media art major [10]. During the course, it was discovered that the basic quality ability involved in the content of the professional course had not been trained and solved in the previous professional basic course. The education and teaching work carried out by some art and design colleges in China has also undergone major adjustments with the development of the new trend of digital media discourse [11].

In this regard, I hope that in the 1970s and 1980s, the education of "contemporary art", the most important part of art history, has been adjusted accordingly [12]. Due to its own advantages, digital twin brings new expansion to the theoretical research and practical application of integrated energy system framework design [13]. The design of integrated energy system framework based on digital twin is shown in Figure 1. The modular design idea based on digital twin is not only reflected in the flexible configuration of the topology and parameters of each energy module of the

integrated energy system [14]. In 2020, there is a very hot term in intelligent manufacturing, that is, "life cycle", the life cycle of a production line and even a factory. The cycle includes basic planning, development and design, hardware construction, production control, process debugging, and later stages of upgrading and reengineering [15].

At the beginning of the birth of digital twin technology, due to technical bottlenecks such as computers, communications, and the Internet of Things [16], the application of digital twin technology was mainly concentrated in small-scale physical models, such as aircraft, automobile manufacturing, weaponry, and digital factories. [9]. In the information age, a new generation of information technology must be fully utilized to promote water resources management [17].

With the comprehensive promotion and application of 5G technology, Internet of Things, big data, blockchain and cloud computing, digitization has become more and more deeply embedded in people's daily life, and vigorously developing the digital economy [18] has become the country's implementation of steady growth, structural adjustment, and transformation. An important means. Concept change and technological change will have a strong driving effect on the change of art form. Digital art is gradually produced and developed under the direct promotion of computer and digital technology to meet the needs of the audience's life and aesthetics, making the production objects of human beings for thousands of years change from "atoms" to "bits" [19].

## 2. THE PROPOSED METHODOLOGY

### 2.1 The Digital Twin Technology

The application of digital twin in the operation and maintenance phase of the entire integrated energy system is mainly reflected at the equipment level and the system level. At the device layer, in order to realize the online health assessment of each major device, the construction of the device-level digital twin framework will use various operating data collected by system sensors and historical device operation data.

The micro-smart factory physical platform constructed by the author of this article is composed of four units: intelligent storage, flexible conveying, intelligent manufacturing, and intelligent assembly. The hardware and control equipment involved include: handling robots, visual measuring instruments, intelligent assembly robots, and flexible conveying. Line, electronic label assisted picking (RFID), three-dimensional warehouse. Jiujiang smart water platform is designed around the city's five-in-one strategic application of "water safety, water resources, water environment, water ecology, and water culture", and comprehensive application of geographic information system, Internet of Things, cloud computing, big data and other emerging technologies, collecting, summarizing and utilizing marketing. Based on mobile internet and high-speed communication, real-time monitoring of existing provincial, municipal and county water resources, water level, water quality, etc. The effective integration of data provides water resource managers with supporting tools to assist decision-making from water abstraction permitting and planned water use, groundwater level monitoring and analysis, water resource scheduling, and water conservation evaluation.

In addition, the use of digital twin technology to describe the real-time state behavior characteristics of real systems, that is, panoramic mirroring, can present the complex factors of various energy sources in the digital space, so that more

complete data characteristics can be incorporated into the optimal scheduling, and the corrective control can be fully evaluated. Strategy and control effect. The flexible conveyor line completes the transfer of materials, with 5 entry ports, 4 processing exits, 1 inspection port, 1 assembly port and 1 delivery port, and can carry a maximum of 9 pallets. The conveyor line can realize flexible scheduling, and RFID readers are arranged at the inlet and outlet.

### 2.2 The Digital Art Design Thinking Mining Information Platform

For an artist, the artistic creation displayed by him is actually a special spiritual experience, and the development of art history is a phenomenon history about the human experience of the spiritual world. Analyzing from this aspect, the ultimate goal of art and design education is to make human beings feel a good spiritual experience, and then reach the ideal state of human beings. Digital twin technology is an interdisciplinary systematic project based on achievements in sensor technology, communication technology, control theory, system simulation and other multi-technology fields.

The informatization construction of water resources is not achieved overnight, but gradually developed under the situation of continuous updating of information technology. For example, the distributed storage architecture solves the data storage bottleneck of centralized storage and realizes large-scale storage applications. As a marginal subject combining wide-caliber technology and art, the core concept of digital art should be art-based and technology-based auxiliary. The general creative process of his works is that the author sends instructions to the corresponding software through the computer according to his own creative intention and design thinking, and combines various creative elements and digital information for storage.

### 2.3 The Digital Art Design of Digital Twin Technology

From this, we can understand that. Through the establishment of models, algorithms and application services that meet the requirements, indicators and regulations of national economic development planning and water resources management, and the simulation analysis of virtual space, the digitalization of water resources information in the city can be realized. and modeling, decision intelligence and advance. The digital twin framework of water resources is shown in previous studies. To study the aesthetic value of digital art, it is necessary to follow the general laws of aesthetic value of works of art, pay attention to the essence of aesthetic value, and also consider the beauty of the combination of science and art, the beauty of interaction between authors and audiences, the beauty of virtual reality experience and the beauty of digital creativity. The unique aesthetic performance and aesthetic value of these digital arts including the beauty of entertainment. During the operation of the integrated energy system, using its multi-energy, multi-load and multi-energy storage characteristics, it can flexibly dispatch and consume various renewable new energy sources.

The coupled transformation and cascade optimization utilization control algorithm for integrated energy system is designed. In addition, according to the real-time information and data such as risk points and fault points provided by the monitoring layer, combined with the evaluation of historical data. The digital twin model of the micro smart factory can realize the effective interaction between physical manufacturing and virtual manufacturing. For example, after

programming and automatic processing, the operation of machines and equipment, as well as data such as personnel flow and logistics (including data information such as time, rhythm, and faults) can be directly integrated. Space composition ability, color expression ability, software operation ability, emotional rendering ability Ability, ability to master the law of movement, ability to express on camera, aesthetic ability of digital art, ability of innovative thinking. According to the requirements of cultivating these basic abilities, reconstructing the knowledge framework of each course is conducive to the connection between basic courses and specialized courses.

### 3. CONCLUSIONS

The modeling of the digital twin factory was completed, and the complex problems of process industry modeling were solved through digital twin technology. It shows the process fault diagnosis and equipment maintenance of the digital factory under the digital twin technology. In the early stage of the development of the digital media art major, most of the articles in various colleges and universities take the professional training goal as the starting point, and deduce the various abilities required by the major. It puts forward the various ability requirements to be achieved in basic courses, and then designs a reasonable and scientific solution, which truly provides a method reference for teachers of digital media art majors to cultivate their abilities.

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