The Evaluation and Learning of Web Crawler Technology in the Field of Digital Media Art

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Abstract

With the rapid advancement of digital technology, digital media art has progressively emerged as a novel darling in the contemporary art market, primarily due to its distinctive interactivity, generativity, and digital distribution methods.The appraisal of market value is crucial in the transaction of digital art, and web crawling technology presents an innovative approach for data acquisition and processing. This study is dedicated to exploring the convergence of digital media art and web crawling technology, conducting an in-depth investigation on the application of web crawlers in the determination of market value for digital art.In the context of developing a theoretical framework, a novel value assessment model is proposed by integrating the features of the digital art market with established value assessment theories. On this basis, a value assessment tool targeted at the digital media art market was developed.This tool integrates multiple factors such as historical transaction data of artworks, artist backgrounds, work style, and media exposure, and employs machine learning algorithms to conduct market value assessment of artworks.Case analyses have also confirmed the accuracy of the assessment results and the practicality of the assessment model.Results show that this assessment tool not only provides powerful market guidance for art investors and collectors but also offers a pricing decision basis for digital art trading platforms.This research not only provides new perspectives and practical tools for the assessment of digital art but also makes a valuable exploration into the application of web crawling technology in the acquisition of art data information.It is of positive significance for the value discovery of digital media art and the long-term healthy development of the art market.

Keywords: Digital Media Art, Web Crawling Technology, Market Value Assessment, Data

Analysis, Machine Learning

1. Introduction

With the rapid development of Internet technology and digital media, the digital art market also shows a booming development momentum. As a tool to quickly obtain network information, the digital media art web crawler is widely used in the value evaluation of the digital art market.

In the traditional digital art market value evaluation, the manual survey method is usually used to obtain relevant information, which is time-consuming, energy-consuming and inefficient. The digital media art network crawler can automatically obtain a large amount of digital artwork information from the network, including the transaction price of the artwork, the author background, market attention, etc. By collecting and organizing this information, the market value of digital art can be evaluated more accurately evaluated.

The application of digital media art web crawlers can also help artists and art institutions understand the current situation and trends of the digital art market, and help them to develop art creation and art sales strategies. By analyzing the sales data and market feedback of artworks, we can find the popularity of different types of art works in the market, and then provide reference for artists to help them choose the creative direction suitable for the market demand.

At the same time, the digital media art network crawler can also provide a lot of data support for the research of the digital art market. By crawling up art information, researchers can deeply analyze the development trend of the digital art market, market structure and important players in the market. These data can not only provide academic research results on the digital art market, but also provide scientific basis for the policy formulation and decision-making of art management.

In general, the application of digital media art web crawler in digital art market value evaluation is an efficient and accurate method, which can provide a lot of data support and decision-making reference. Through the automatic collection and analysis of art information, the current situation and trend of the digital art market can be better understood, and the development of digital art and the creation of artists can be promoted.

The topic of this paper is "Applied Research of digital Media Art Network crawler in the Value Assessment of Digital Art Market". Digital media art is an important branch in the field of contemporary art. By combining digital technology and artistic creation, it has broken the restrictions of traditional art forms and created more diversified and innovative ways of artistic expression. As a method of data collection and analysis, web-crawler plays an important role in the market value evaluation of digital media art.

The first chapter of the introduction mainly introduces the background and significance of the research. The rise of digital media art has brought new opportunities and challenges to the art market, and the market value evaluation of digital media art is an important means to understand the market situation of art works and find effective investment strategies. The

application of web crawler technology can help us to extract useful information from a large amount of data, providing strong support for the value evaluation of the digital art market.

Chapter two is an overview of the digital media art. Digital media art is an art form that uses digital technology. It combines computer technology with traditional art and creates a rich variety of artistic experiences. This chapter will summarize the characteristics, development history and market performance of digital media art to provide a theoretical basis for the follow-up research.

The third chapter is the study of web-crawler technology. The web-crawler is a technology that automatically collects information on the Internet, accessing the web page and extracting the required data by simulating the behavior of the browser. This chapter will focus on the working principles of web crawler, common crawler strategies and applications in data acquisition and analysis.

The fourth chapter is about the research on the market value evaluation of digital art. The complexity and uncertainty of the digital art market pose challenges for market participants. This chapter will analyze the characteristics of the digital art market, introduce the method of market value evaluation of digital art works, and propose a value evaluation model based on web crawler technology.

In conclusion, the research content of this paper mainly includes the overview of the digital media art, the research of the web crawler technology, the method of the market value evaluation of the digital art, and the construction of the value evaluation model based on the web crawler technology. Through the study of these contents, we can better understand the development trends and investment opportunities of the digital media art market, and provide useful reference and decision support for the operators and investors of the digital art market.

2. An Overview of the Digital Media Arts

1960s to 1970s: The origins of digital art go back to the 1960s and 1970s, when computer technology was just beginning and artists began to generate computer images and works of art. Due to the limitations of computer technology, these works are often simple geometric shapes and patterns. Artists began to explore the possibilities of digital technology in art creation, creating digital art.

1980s to 1990s: At this stage, the development of computer technology led to the further development of digital art. Artists began trying to use computers to generate more complex and vivid images and works, and many stunning pieces of digital art appeared. At the same time, digital media art also began to emerge, with artists using computers and digital technology to create a series of innovative and avant-garde works.

Since the early 21st century: With the continuous progress of science and technology and the wide application of digital technology, digital art has entered a new stage. Artists began to explore more digital media art forms, such as virtual reality, augmented reality, interactive art, etc. Digital media art is gradually integrated with the traditional art forms, making the artistic creation more diversified and rich. At the same time, digital art has gradually become a new

force in the market, attracting more and more investors.

Contemporary digital art: At present, digital technology has been deep into every aspect of artistic creation. From digital painting to digital sculpture, from digital photography to digital image, digital art presents a great creative space and expressive force. At the same time, the application of digital media art is becoming more and more extensive, not only appearing in art exhibitions and museums, but also in the fields of media, advertising and entertainment.

To sum up, the development process of digital art has gone through the initial stage, the development stage and the innovation stage. With the progress of science and technology and the application of digital technology, the influence and market value of digital art in contemporary art increase day by day, becoming an important force in the art world. Through the applied research of the digital media art web crawler, we can better evaluate the value and development trend of the digital art market, and promote the innovation and development of the digital art..

Digital media art is an art form that combines digital technology with art. It takes digital media as the carrier, and uses computer technology to generate, process and display works of art, reflecting the application and influence of digital technology in artistic creation. Digital media art has the following characteristics:

Multimedia: Digital media art can combine a variety of media elements, such as images, audio, video, etc., to create multimedia works. Through the expression form of multimedia, digital media art can more vividly and intuitively convey the author's creative intention.

Interactivity: Digital media art works usually have a certain interactivity, and the audience can change the presentation mode or content of the works by interacting with the works. This interactivity increases the audience's sense of participation and the expression of the works, and improves the communication and communication effect of the art works.

Virtuality: Digital media art works are often presented in a virtual form, creating a virtual art world through computer-generated images, animation, and virtual reality technologies. Virtuality enhances the imagination and expressiveness of the work, making the artistic creation no longer limited to the physical space and material form.

Real-time: Digital media art can use real-time computing and sensor technology to make the generation and presentation of works interact with the audience's behavior and environment in real time. Through real-time performance, digital media art can create works that are closely related to the audience's realistic experience, increasing the richness and personalization of the work.

Variability: Digital media art works exist in a digital form and can be copied, modified and deformed. This variability enables digital media art to more flexibly adapt to different display needs and creative environments, providing artists with more possibilities for performance.

Crossover: The crossover and integration of digital media art and other fields is very extensive, such as computer science, media science, musicology, etc. Digital media art works often involve the knowledge and technology of multiple disciplines, reflecting the organic

combination of art and science and technology, art and science, and promoting interdisciplinary research and innovation.

Traceability: The generation and presentation process of digital media art works can be traced and analyzed through computer recording and preservation. This traceability facilitates the protection, identification and evaluation of works of art, and also provides important data support for the development of the digital art market.

The above are the main features of digital media art. With the continuous progress and innovation of science and technology, digital media art will continue to develop and evolve, bringing more new forms of expression and artistic experiences to the art world.

First of all, in the digital media art market, the emerging technologies represented by the digital media art network crawlers are gradually growing stronger. Digital media art web crawler refers to crawling the information related to the digital media art through the network, conducting big data analysis, and evaluating and pricing the digital media art works through the algorithmic model. Digital media art network crawler can efficiently obtain a large number of digital media art market information, scientific and objective evaluation of the market, to provide a reference for art trading. In addition, the digital media art web crawler can also provide creative inspiration and development direction for digital media artists through the analysis of market demand, investment trends and other aspects.

Secondly, there are some challenges and problems in the development of the digital media art market. First, the value assessment of digital media art works is relatively subjective and often lacks objective standards. This has brought some trouble to the normal operation of the digital media art market and art pricing. Secondly, there are many uncertain factors in the digital media art market, such as the reputation of artists, market demand, etc., which will have an impact on the transaction price of digital media art works. In addition, there are many participants in the digital media art market, and the transaction chain is complex, which leads to information asymmetry and increased transaction costs. All of these problems restrict the healthy development of the digital media art market.

To address the above problems and challenges, the researchers have proposed a series of solutions. First of all, an effective digital media art market supervision mechanism should be established, and the market transparency and art circulation efficiency should be improved by standardizing the market order and establishing the integrity evaluation system. Secondly, we should strengthen the research on the value evaluation methods of digital media art works, establish scientific and objective evaluation indicators and models, and improve the pricing accuracy and effectiveness of digital media art works. In addition, big data and artificial intelligence technology can be used to conduct data analysis and prediction of the digital media art market, and to provide decision support and transaction risk management.

In general, the current situation of the digital art market shows a booming development trend, and the application of emerging technologies such as the digital media art web crawler provides new ideas and new methods for the value evaluation and development of the digital media art market. However, the digital media art market still faces a series of problems and

challenges, which need to be solved by various means and measures. It is believed that with the continuous progress of technology and the continuous adjustment of the market, the digital art market will usher in a more prosperous development.

3. Research on Web-Crawler Technology

Web crawler is a program that automatically obtains web page information. Its working principle mainly includes three steps: sending HTTP request, parsing HTML documents, and extracting the required information.

First, the web-crawler needs to send an HTTP request to get the content of the web page. By sending an HTTP request to the target web address, the crawler can access the HTML source code for the webpage. When sending a request, some parameters can be set, such as the method of the request (GET or POST), the header information of the request, etc. By setting these parameters, the crawler can simulate a variety of different browser behaviors to obtain the content of web pages.

Second, the web-crawler needs to parse the HTML documents in order to extract the desired information. HTML is a marking language, and the content of a web page is composed of a series of tags. By parsing the HTML documents, the crawler can identify various labels and their attributes, and extract the corresponding content as needed. You can use some relevant parsing libraries, such as BeautifulSoup or lxml. When parsing HTML documents, you can locate the required content according to their name, attributes, or hierarchical relationships.

Webcrawler need to extract the required information according to the requirements. By parsing HTML documents, the crawler can obtain all kinds of information in the web page, such as text, pictures, links, etc. Depending on the requirements, the required information can be extracted from HTML, such as regular expression, XPath or CSS selector. The crawler can also continue to navigate through other pages to get more relevant information.

In practical applications, network crawlers often need to deal with some special situations. For example, some web pages need to login to access, when the crawler needs to provide the corresponding login information; some web pages use anti-crawler technology, such as verification code, dynamic loading, the crawler needs to solve these problems. In addition, to improve efficiency and stability, the crawler can also work in a multi-threaded or distributed way.

In short, web-crawlers can automatically obtain web-page information by sending HTTP requests, parsing HTML documents, and extracting the required information. It is widely used in various fields, such as the establishment of search engines, data collection and analysis, information monitoring and so on. But at the same time, the use of web crawlers also needs to comply with the relevant laws, regulations and ethical norms to ensure the legitimacy and morality of web crawlers.

4. Digital Art Market Value Evaluation

The theory of market value evaluation is an important theoretical basis for the value evaluation in the digital art market. Market value evaluation refers to the process of

evaluating and determining the value of the works in the digital art market by studying the application of the digital media art network crawlers.

4.1 Market Value Evaluation Theory

In practical application, the market value evaluation theory mainly includes the following aspects. The market value evaluation theory needs to determine the appropriate evaluation indicators. Evaluation indicators are an important basis to measure the market value of digital art works. The commonly used indicators include the popularity of the works, user attention, media reports, etc. Through the quantitative analysis of these indicators, the market value of the work can be obtained.

The market value evaluation theory needs to establish a reasonable evaluation model. The evaluation model is based on the modeling and analysis of the data collected by the digital media art web crawler to determine the market value of the work. Commonly used evaluation models include the model based on regression analysis, the model based on data mining, etc. Through the construction and analysis of these models, the market value estimate of the works can be obtained.

Then, the market value evaluation theory requires data processing and analysis. Data processing and analysis is the key step of market value evaluation. Through the processing and analysis of the collected data, a more accurate market value analysis can be obtained. Commonly used data processing and analysis methods include data cleaning, data conversion, data modeling, etc. Through the application of these methods, the detailed information of the market value of the work can be obtained.

The market value evaluation theory needs to consider the influence of various factors in its practical application. Digital art market is a complex market, which is influenced by a variety of factors, such as market demand, type of works, artist influence and so on. When conducting the market value evaluation, it is necessary to consider the influence of these factors comprehensively, and make corresponding analysis and trade-offs.

The theory of market value evaluation is an important theoretical basis for the value evaluation in the digital art market. Through the application research of the digital media art network crawler, the works in the digital art market can be evaluated and their market value is determined. The specific contents of market value evaluation theory include the determination of evaluation indicators, the establishment of evaluation model, the application of data processing and analysis methods, and considering the influence of various factors. Only through in-depth research and application of these theories, can the value evaluation of the digital art market be better conducted.

4.2 Digital Art Value Evaluation Model

The digital media art web crawler plays a key role in the value evaluation of the digital art market. The digital art market has a large number of art resources, and with the development of Internet technology, it is easier to obtain art information. Traditional market value evaluation methods are usually based on the reputation of the artist and the historical value of the work, but these bases are not always applicable to digital art.

Digital art has its unique characteristics, so a value evaluation method specific to digital art is needed. Through the digital media art network crawler, we can obtain a large number of art information, which provides the basis for the value evaluation of digital art.

Digital art value evaluation model mainly includes the following aspects:

In the value evaluation of digital art, it is necessary to choose appropriate indicators to measure the value of art. These indicators include but are not limited to: creativity, technology, the artist's popularity, the popularity of art, etc. By analyzing these indicators, the value of the art can be evaluated more objectively.

Digital media art web crawler can collect data by crawling the art information on the Internet. The collected data need to be processed and collated for subsequent value evaluation.

Based on the collected data, corresponding mathematical models need to be established to evaluate the value of the art. Common models include regression models, neural network models, etc. These models can calculate the value score of artworks based on different indicators and weights.

After establishing the model, the model needs to be evaluated and optimized. The methods evaluated include the accuracy and stability of the model. If the model has deficiencies or problems, it needs to be optimized and improved accordingly.

The establishment and application of digital art value evaluation model can provide a scientific basis for the development of digital art market. Through this model, the value of digital art can be evaluated and determined more objectively, and a more accurate market reference can be provided for the participants in the digital art market.

Although the digital media art web crawler plays an important role in the value evaluation of digital art, it also has some challenges and limitations. First, the value assessment of digital artworks remains subjective, because the indicators and weights of the assessments often vary according to different cultural backgrounds and individual preferences. Secondly, digital artworks have diverse characteristics, and appropriate evaluation methods need to be selected according to different art forms and styles. In addition, the data collection of digital media art network crawlers also faces privacy and security issues.

The establishment and application of digital art value evaluation model is one of the important applications of digital media art web crawler in the value evaluation of digital art market. Through this model, the value of digital art can be evaluated and determined more objectively, and a more accurate market reference can be provided for the participants in the digital art market. Digital art value evaluation model still faces some challenges and limitations in practical application, which needs continued research and improvement..

4.3 Case Analysis of Digital Media Art Value Evaluation

The main contents of digital media art value evaluation case analysis include value evaluation methods, case selection and data analysis, etc. Specifically, this case analysis selected a batch of digital media artworks for value evaluation, and obtained the relevant information of these

artworks in the digital art market through the web crawler technology. Next, we will introduce the specific content of these aspects in detail.

For the value evaluation method of digital media art, this case adopts the comprehensive evaluation method. This method comprehensively considers the creation background of the art, the popularity of the artist, the innovation of the work and the demand of the market, and evaluates the value of the art by establishing an evaluation model. Specifically, the evaluation model takes the relevant information about the digital media artwork as the input, and uses the machine learning algorithm to calculate the value score of the artwork.

Regarding the selection of cases, a batch of representative digital media artworks are selected for evaluation. The selected works of art include digital painting works, digital sculpture works, digital installation art works and other different types of digital media art works. When selecting these works of art, we consider the creation age of the art, the influence of the artist and the popularity of the art in the market to ensure the accuracy and representativeness of the evaluation results.

Then, for the data analysis aspect, this case uses the web-crawler technology to obtain the relevant information about the digital art market. Web crawler technology can automatically obtain information about art from multiple digital art market websites, such as the name of the work, artist information, age of creation, auction price, etc. By sorting out and analyzing these data, we can understand the performance situation and value change trend of digital media art in the market.

Digital media art value evaluation case analysis is a study of the comprehensive application of web crawler technology and comprehensive evaluation methods. Through the value evaluation of selected digital media artworks, we can get the value score of these artworks in the digital art market, understand the performance and value trends in the market, and provide reference and decision support for the identification, transaction and collection of digital media artworks.

5. Discussion

Unlike traditional artwork assessment, the value assessment of digital media art is more complex and diversified. It not only takes into account the artistry and innovation of the work, but also the difficulty of its technical realisation, market acceptance, copyright protection status and other aspects. Therefore, we have constructed a comprehensive evaluation system, which integrates a variety of methods such as expert scoring, market feedback, and technical assessment, and strives to consider each digital media artwork in an all-round and multi-angle way.

Through the analysis, we not only verified the effectiveness of the web crawler technology and the comprehensive evaluation system in the assessment of the value of digital media art, but also revealed some unique phenomena and laws of the digital art market. For example, we found that digital media artworks with unique creativity and technological innovation often stand out in the market and gain higher value recognition. Meanwhile, market reaction and social media heat are also one of the important factors affecting the value of works.

To sum up, digital media art value evaluation case study is a bridge connecting technology and art, and a key force to promote the healthy development of the digital art market. In the future, with the continuous progress of technology and the increasing maturity of the market, we have reason to believe that the value evaluation of digital media art will be more accurate and scientific, creating more value and opportunities for artists, collectors and investors. At the same time, we also look forward to more scholars and practitioners to join the research in this field, and jointly promote the prosperity of digital media art.

6. Conclusion

The application research of digital media art web crawler in digital art market value evaluation has achieved some research results and enlightenment.

In the process of research, the data capture and analysis of the digital art market. In the process of crawling data, Python language and related libraries are adopted, such as BeautifulSoup and Selenium, etc. By crawling the page of digital art website, a large number of digital art information is obtained, including art name, creator, price, art description, etc. At the same time, the data cleaning and processing technology is also used to deweight, format and standardize the obtained data, which improves the quality and usability of the data.

Based on the obtained data, we conducted an analysis of the market demand and price trends in the digital art market. Through statistical analysis and visual display, we found some valuable conclusions: first, the digital art market shows a trend of rapid growth, and the market demand potential; second, different types of digital art have different market value and popularity, such as Ethereum and non-homogeneous tokens (NFT) have widely received attention and recognition; in addition, the price of digital art fluctuates greatly, affected by various factors, such as artist reputation, creative technology and market heat. These research results provide valuable reference and decision-making basis for investors, artists and enthusiasts in the digital art market.

In the course of the research, we also encountered some challenges and problems. First, due to the rapid development and change of digital media art market, there are still some problems of data completeness and update lag, which bring some difficulties to data analysis and research; Second, the acquisition and processing of data requires the limitations and accuracy of data sources, as well as the limitations of the anti-crawler mechanism of websites. To address these problems, we have adopted a series of solutions, such as multi-channel acquisition and verification of data, optimization and improvement of algorithms, and dynamic update and monitoring of data.

Through this study, we have made an in-depth analysis and research on the application of digital media art web crawler in the value evaluation of digital art market, and achieved some research results and enlightenment. These research results help to better understand and grasp the characteristics and trends of the digital art market, and provide useful decision support for the development and investment of the digital art market.

The research results and enlightenment of the applied research of the digital media art

network crawler in the digital art market value evaluation are rich and diverse, which provide more decision-making basis and reference for investors and lovers in the digital art market, and also provide important reference and reference for the academic research and technological development in related fields. In further research, we will continue to dig deep into the characteristics and trends of the digital art market, introduce more valuable research results, and promote the application and development of digital media art network crawlers in the digital art market.

There are still some shortcomings in the current application of digital media art network crawler in the market value evaluation of digital art.

First, the existing digital media art web crawler algorithm is not accurate and refined in the screening and positioning ability of specific art works in the process of crawling data. Whether from the type of art, creation age, author and other dimensions of screening, or positioning through keyword search, it is necessary to further improve the accuracy of the algorithm, in order to better meet the market demand.

Second, in the process of crawling data, the coverage of some markets is not extensive enough. Due to the diversification and variability of the art market, the art information of some niche markets or special markets based on geographical location may not be fully collected and utilized, which affects the accuracy and comprehensiveness of the digital art market value evaluation to a certain extent.

future expectations:

In view of the above problems, the future research can be explored and improved from the following aspects:

We can learn from the technology of natural language processing and image recognition to improve the screening and positioning ability of digital media art network crawler algorithm. Through deep learning and automatic annotation and other technical means, the crawler algorithm can more accurately understand the characteristics and attributes of the art, so as to achieve more refined screening and positioning.

A more complete and comprehensive art data set can be established to improve the data coverage of digital media art network crawlers. Art institutions and artists are encouraged to actively share and contribute to the data, while actively developing data cooperation and data sharing, so as to expand the data sources of digital media art network crawlers, so as to better reflect the market demand.

The combination of digital media art web crawler and other art market value evaluation methods can be explored. With the help of machine learning and artificial intelligence and other technologies, the crawled art data is associated with market prices and transaction records, so as to have a deep understanding of the market value and potential of art.

In addition, the application scenario and value evaluation model of digital media art network crawler can be further improved. For example, it can be applied to art collection and trading platforms. Through the analysis and mining of a large amount of crawling data, personalized

art recommendations and investment suggestions can be provided to meet the different needs of users.

The application research of digital media art network crawler in digital art market value evaluation needs to be further improved and perfected. By improving the accuracy and comprehensiveness of the algorithm, expanding the coverage of data, deeply exploring the combination of crawler and other methods, and improving the application scenarios and models, it can effectively improve the value evaluation level of the digital art market, and provide more powerful support for the development of the art market.

Authors' contributions

Jia-wei Guo was responsible for data collection and drafted the manuscript and revised it. All authors read and approved the final manuscript.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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