

# The Construction and Evolution Trends of Media Ecology Under Artificial Intelligence Technology System

Ying Yu <sup>a</sup> and Zicun Zhao <sup>b</sup>

Shenyang jianzhu university Institute of Design and Art, Hunnan, Shenyang, Liaoning, China

**Keywords:** Artificial Intelligence Technology, Media Ecology, Ecological Evolution, Production Process.

**Abstract:** The development of artificial intelligence technology has provided external technical conditions for the construction of communication ecology. The media industry has gradually started to use intelligent technology for content change and structure optimization, and has adopted data processing and machine algorithms to realize the "intelligence + intelligence" transformation of the media ecology. This paper analyzes the application of artificial intelligence technology in the media field, discusses the evolution trend of media ecology driven by technology, and puts forward suggestions for the integration and development of media industry and artificial intelligence technology.

## 1 INTRODUCTION

Artificial intelligence technology plays an important role in the media field based on Internet of Things technology, artificial intelligence technology and big data technology, laying the foundation for the evolution of media ecology in the underlying architecture and realizing the optimization of media production factors and communication factors. Artificial intelligence technology provides a high-quality environment for the development of the media industry and poses new challenges to the development of the media field. How to achieve technological integration on the basis of existing media business and meet the personalized needs of audiences should attract great attention from related fields.

## 2 THE CURRENT STATE OF APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN THE MEDIA FIELD

Artificial intelligence technologies cover a wide range of fields. Artificial intelligence technologies applied to the media sector include intelligent data

analysis technologies, logic control technologies, and virtual scene construction technologies. For example, in 2016, China started to experiment with the application of intelligent robots to edit news documents and write copy content according to grammar and logic. The quality of the content can be guaranteed. This technology is achieved by applying logic control technology based on artificial intelligence technology. After the intelligent content creation is completed, the application based on data analysis technology can intelligently push the content and accurately analyze the needs and behaviors of users. In the process of live broadcast and program building, virtual scene construction technology uses intelligent signing and scene splicing to improve viewers' experience of the program. The application of artificial intelligence technology in the media field takes various forms and has a great impact on the evolution of the media ecology, both for the accuracy and scientific dissemination of information, but "pirated articles", "black box operations", "narrow push of information", "scripts", and how to establish a green and high-quality media ecological environment in the field of media control according to the current evolution of the media ecology is particularly important. (Ma. 2022)

<sup>a</sup> <https://orcid.org/0000-0003-4111-0882>

<sup>b</sup> <https://orcid.org/0000-0003-4718-265X>

### 3 THE EVOLUTION TREND OF MEDIA ECOLOGY UNDER ARTIFICIAL INTELLIGENCE SYSTEM AND DESIGN METHOD

#### 3.1 Changes in the Structure of Communications: Development into the Field of Integrated Intelligence

The application of artificial intelligence in the media field has provided great convenience for program production and news gathering, and has shown a development from professional intelligence to comprehensive intelligence in the communication structure. The working atmosphere and work efficiency in the media field have been rapidly improved, and the trend of industrialization has been observed. The evolution of the communication structure to the field of integrated intelligence has led to a gradual increase in the industrialization of the media. The total scale change of media industry from 2017 to 2021 is shown in Table 1.

Table 1: Total Scale of Media Industry from 2017 to 2021 (RMB 100 million Yuan)

A particular year	2017	2018	2019	2020	2021
Total value of out-put	19506.9	21571.7	24140.6	26168.2	29710.3
Rate of rise (%)	15.69	10.58	11.91	8.4	13.54

According to the content analysis in Table 1, artificial intelligence is mainly applied in the media field to promote the industrialization of media, and the total output value shows a year-on-year increase in the development trend. This is due to the comprehensive intelligent direction of the transformation process of the communication structure of the obvious optimization of stylized writing can reduce more than 20% of the editing time, automatic generation technology can reduce more than 30% of the working time, media staff can devote more energy to further content. In addition, artificial intelligence as the announcer and announcer of news programs, technicians report the news through environment building and character building, increasing the experience and live sense of the program. Under the artificial intelligence system, the integration of technology and content is gradually

realized in the communication structure from the original programmed writing to the creation of offline visual content, and the development from the original professional intelligence to comprehensive intelligence has promoted the industrial evolution and structural evolution of the media ecology. (Zhang, Liu. 2021)

#### 3.2 Changes in Communication Technology: Efficient Factor Production Processes

##### 3.2.1 Content is the Core of Media Production

The application of artificial intelligence technology in the media field has realized changes in the production factors, becoming more efficient in content production, showing dynamic changes in the production process and shifting to the direction of "user production + professional production". Under the new production model, the media form in the media field has changed significantly, as shown in Table 2.

Table 2: Changes of Media Form of the Media Industry from 2017 to 2021

A particular year	2017	2018	2019	2020	2021
Internet traffic (one billion GB)	245.9	711.1	1220	1656	2216
APP quantity (ten thousand)	252	345	367	403	453
Number of movies (ten thousand)	41179	50776	60079	69787	75581
Number of TV programs (ten thousand)	1414	2446	2654	2874	3021

As can be seen in Table 2, changes in communication technologies have led to an evolving media landscape, with Internet users gaining access to more content and information. The data analysis of artificial intelligence technology and the collection of user data through big data technology have led to more accurate content dissemination in the media field, and users have become producers and creators of media content. The application of powerful data collection and data analysis functions of big data technology and media content creation through programmed settings has led to a continuous growth and prosperity of the self-publishing form.

### 3.2.2 Artificial Intelligence Big Data Analysis process

In terms of artificial intelligence big data analysis technology, the analysis demand gradually changes from statistical mining analysis of small-scale, single-source, single-modal data to complex heterogeneous correlation of massive, multi-source, multi-modal data. The rapid development of deep learning technology has driven the improvement of big data analytic model capability. Neural network models returned to the limelight after winning the 2012 ImageNet competition, a target recognition project for computer vision, and subsequently gave birth to a series of groundbreaking work, including knowledge graphs to provide knowledge services, generative adversarial networks to synthesize real data, and GPT-3 pre-trained language models. In addition, increasingly mature deep learning frameworks (such as TensorFlow, PyTorch, and Flying Paddle) have lowered the barrier to using deep learning to analyze big data. (Cheng, Liu, Zhang, 2022)

As shown in Figure 1, the artificial intelligence big data analysis process atmosphere two steps, the software tool layer in the application process to achieve a comprehensive combing of data collection functions, and the collated data for in-depth analysis, and finally the modular matching content generation for the application layer to achieve personalized media content customization. In this process, the media industry ecology shifts in the direction of efficient production processes, and the potential of technology in the development of media industrialization and scale is tapped. At present, the media field is also more inclined to personalization and customization in content production, disseminating content according to the preferences of the public, so that the massive amount of information in the media field provides accurate services for users and realizes the creation of a large-scale and personalized media content dissemination ecology.

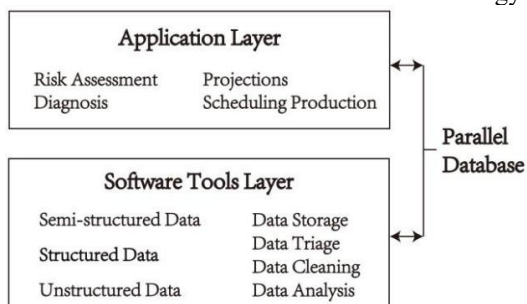


Figure 1: Artificial Intelligence Big Data Analysis Process Architecture

### 3.3 Change in Values: Total Management of Technical Content

#### 3.3.1 Content is the Core of Media Production

From the perspective of the evolution of the media ecology, the development of artificial intelligence is mainly reflected in the concept of communication. The editorial staff is the reviewer and disseminator of content, assuming the right to gate-keeping decisions in the development of the media, playing the main role in the planning, production and dissemination process, and needing to control the dynamics of the program in the live program. In this environment, the communication concept of media people has changed, making the media ecology change to the direction of integrated management of technical content. In the evolution from the original content construction to integrated management, while reducing the work pressure of the personnel involved, it also places higher demands on media people. The following is a table of the application of AI technologies in program construction from 2017 to 2021. (Zhang, Gong, 2020)

Table 3: Artificial Intelligence Programs from 2017 to 2021

A particular year	2017	2018	2019	2020	2021
Virtual Studio (all)	1	5	12	18	24
Smart article push (ten thousand pieces)	1544	254	8415	125412	16334
Virtual anchor (all)	0	2	8	10	13
Program format (all)	2	12	18	24	28

According to the content analysis in Table 3, the number of artificial intelligence programs gradually increases from 2017 to 2021, and the forms that appear are more diverse. Under the artificial intelligence system, the media ecology gradually changes in terms of value concept, and technology and content become the main means of media content construction and dissemination.

#### 3.3.2 Structural Design

In terms of artificial intelligence big data processing technology, there are many different parallel computing models depending on the processing requirements, including batch processing represented

by Hadoop and Spark, high real-time stream processing represented by Spark Streaming, Flink, STORM, stream batch hybrid processing represented by Apache Beam and Lambda, and graph processing represented by GraphX and Apache Giraph. and graph processing represented by GraphX and Apache Giraph.

Tall array is a new mode of operation provided by Matlab program to cope with big data analysis. tall array means to represent all the data in the form of column vector first, to create a long column vector with one column for each parameter, in the process of programming algorithm not all the values of the vector, only the first few data, other data with "?" " This means that these data are not put into memory during the programming process and the computer does not know the amount of data in the column array. In the subsequent calculation, when calling the tall array, using the algorithm to calculate all the data, the tall array will be in the form of a stream calculation, read a section of data, calculate and process this section of data, and then read the next section of data, access, read, and process a large collection of data in sections, until all the tall array data is traversed, complete the calculation, and summarize the output of the value requested by the operation command. When using a single computer, you can use the Matlab Parallel Computing Toolbox to call multiple CPUs to process operations simultaneously, and when processing in a cluster, you can also use the Cluster Parallel Computing Toolbox, which can optionally call all available CPUs and memory in the cluster to process the data, which can greatly improve the computing power and increase the operation speed by This can greatly increase computing power and run more than 3 times faster. (Cui, Ma, Zhang. 2020)

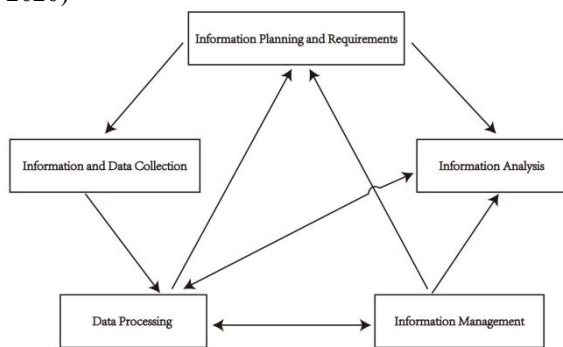


Figure 2: Workflow Based on Big Data Artificial Intelligence Technology

As shown in Figure 2, the workload of the media is reduced based on big data artificial intelligence technology, and the work pressure of the writers and

directors is gradually reduced. Especially in the process of building virtual studios and shaping virtual characters, the dissemination of programs can be accomplished by the modular adjustment of technicians.

## 4 MEASURES ECOLOGY CONSTRUCTION MEASURES UNDER ARTIFICIAL INTELLIGENCE SYSTEM

### 4.1 Create High-Quality Intelligent Content

The creation of high-quality intelligent content can increase the audience's live experience of the program and make the audience have a different program experience. In the process of building text media content, it can also realize personalized and accurate content pushing, which meets the interests of the audience. Therefore, the construction of media ecology should focus on the creation of high-quality content and realize the simultaneous innovation and development of content and technology in the construction of media ecology.

### 4.2 Policies to Promote Cross-Border Integration

In order to further deepen the application of artificial intelligence in the media field and play its role in the construction of media ecology, China should create major projects through policy guidance. The hardware facilities and software technologies in the media field have shown the development trend of continuous development and progress, and the media ecology is evolving in the direction of technology and integration, which makes the media field play a driving role in the perspective of content dissemination, structure optimization and value change.

### 4.3 Improving the Construction of Laws and Regulations

Although the application of artificial intelligence in the media field has promoted the development of media ecology, audiences also question whether there are ethical and legal issues in the application of data analysis, personalized recommendation and artificial intelligence technologies. There is a need to provide

a good external environment for the construction of programs in the media field by improving legislation to promote the in-depth development of the media industry, thus building a good media business environment.

methodology [J]. News lovers, 2020, (03): 12-14.

#### **4.4 Strengthen the Introduction of Technical Talents**

The development of media industry under artificial intelligence technology, relevant practitioners need to have media knowledge and a deep understanding of communication theory, and also deal with a deep understanding of artificial intelligence technology in order to complete the creation of quality programs with the support of software and hardware.

### **5 CONCIUSION**

To sum up, the media ecology driven by artificial technology is gradually developing to the perspective of comprehensive intelligence, deep integration and comprehensive governance. Relevant media subjects should pay high attention to the integration application of artificial intelligence technology in the media field, and China should also tap into the integration measures of artificial intelligence technology and media field to promote the benign evolution of media ecology through content intelligence, policy project-based implementation, standardized legislation on content intelligence, and strengthening the introduction of intelligent technology talents.

### **REFERENCES**

- Cui Chuanzhi, Ma Tianci, Zhang Ziqian. Oilfield fracturing well productivity prediction model based on matlab big data technology [C]. 2020 International Field Exploration and Development Conference in Chengdu, China, 2020, (09): 2040-2047.
- Cheng Xueqi, Liu Shenghua, Zhang Ruqing. Thinking on new system for big data technology [J]. Bulletin of Chinese Academy of Sciences, 2022, 37 (1): 60-67.
- Ma Ran. Analysis on the contradiction of product market structure in newspaper industry media convergence under media ecological reconstruction [J]. News Forum, 2022,36 (03): 20-22.
- Zhang Shu, Liu Jian. Analysis of aesthetic cultural connotation change and media ecological environment [J]. Huaxia Culture Forum, 2021, (02): 110-117.
- Zhang Wenjuan, Gong Chengbo. Blockchain and the future media ecological order: a new thinking view and