Evaluation of the Transformation and Prospects of News Communication in the Era of Multimedia Network

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Abstract: *As an important tool for people to understand current affairs and politics, the importance of the news industry is self-evident. The industry has gradually shifted from being undertaken by traditional media to being undertaken by emerging media. It is difficult to spread news through emerging media, such as various social platforms on the internet, without the perspective of multimedia. This is because today is the era of multimedia networks. The idea of this article was to first start with the development and application of multimedia in recent years, analyze the application methods of this technology, and then showcase the core ideas of news communication that implement traditional media to new media. Ant Colony-based Routing Algorithm (ARA) was used to improve the application of multimedia technology.*

Keywords: *Multimedia Network Era, News Dissemination, Ant Colony-based Routing Algorithm, Traditional Media and New media*

1. Introduction

News dissemination mainly refers to a continuous process from news media issuing news to the acceptance of news by a large audience. Whether it is traditional media or new media, the essence of news output is the same, both in order to convey information to the audience. Therefore, the transformation of news dissemination is ultimately only about changing its dissemination form, channels, and efficiency. As an information exchange technology that can transmit various information carriers such as sound, text, and images, multimedia technology would inevitably become the main relying object of new media in the present and future. Therefore, this article would analyze these two to better integrate them.

The news and communication industry was once generally operated by the traditional media industry in the form of paper newspapers. In a time when advanced technology was scarce, newspapers played a crucial role in people's lives. Heese Jonas once investigated and found that local newspapers had increased corporate misconduct after closure, and concluded that traditional news carriers such as newspapers could serve as important supervisors of corporate misconduct [1]. With the development of technology, Zhang M believed that in order to meet the needs of society, news dissemination must undergo changes [2]. There are many ways of change, and Chen L believed that media integration was an optional path for news dissemination [3]. At the same time, social media is also a good choice and can play an important role in news dissemination. Puri Neha believed that social media could improve health literacy in the context of the epidemic [4]. Liu X P proposed that in today's world, traditional media is also starting to open accounts on social media platforms such as Weibo and use new media for news dissemination [5]. In a network filled with various types of information, people should have a certain level of discrimination ability. Shu Kai believes that for the use of social media, the spread of fake news should be vigilant [6]. As Van Bavel believes, the spread of false information, such as false news and conspiracy theory, would pose a serious threat to society [7].

Multimedia technology is an emerging product of the Internet era. Barakabitze Alcardo Alex believed that traditional networks lacked flexibility, agility, and scalability [8]. It can be seen that network technology also needs to be developed and updated. For example, Garg Sahil believed that the continuous development and use of multimedia applications and services promoted exponential growth in social media traffic [9]. Multimedia technology not only has the ability to be applied in online

socializing, but also has other capabilities. KM Delphin Raj applied multimedia technology to underwater sensors [10]. Gao Y P also applied multimedia technology to evaluate the concentration of nanosilver [11].

2. Impact of Multimedia Networks on Society

2.1 Application of Multimedia in Teaching

The application of multimedia technology in teaching generally utilizes technologies such as screen projection and all-in-one machine for teaching. With these technologies, teachers can completely replace the traditional chalk and blackboard teaching method. Liu J W studied the application of multimedia teaching in mathematics classrooms and proposed improvement methods [12]. He proposed the need to guide students to think based on the rich content of multimedia blackboard writing, and can also use the "PPT remote flipping pen" in multimedia to replace the mouse, thereby freeing hands and being able to do some body movements to assist in teaching. Gu L proposed using grey correlation analysis and neural networks to assist multimedia teaching [13].
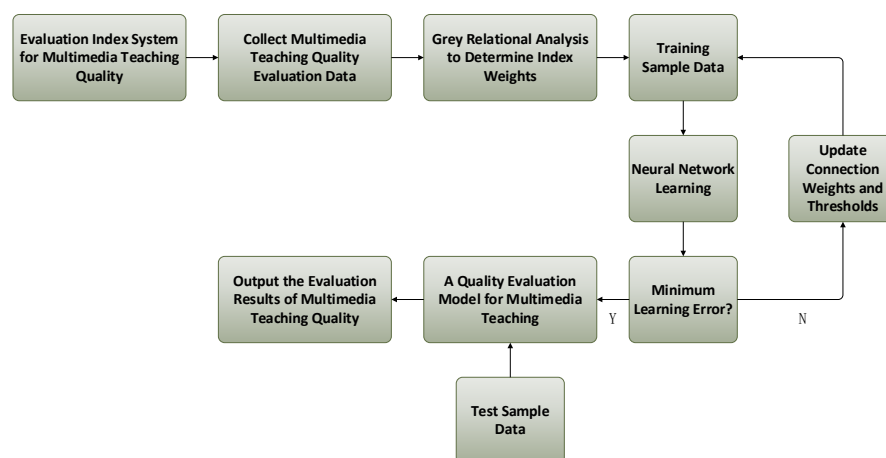

Figure 1. The impact of grey correlation analysis and neural networks on multimedia teaching

As shown in Figure 1, the first step is to evaluate the quality of multimedia teaching based on the indicator system, and then collect rating data. It uses grey correlation analysis to determine the weight of the indicator, trains sample data, and then learn through neural networks. If the learning error reaches the minimum, a quality evaluation model is directly established. Otherwise, the connection weights and thresholds are updated and repeatedly learned through the neural network to guide the error until it reaches the minimum. Finally, the quality evaluation results are output again.

2.2 Application of Multimedia Networks in Computer Technology

In today's era of rapid computer development, its diversity is difficult to estimate. Wu K J once proposed that computer multimedia technology integrated information integration, processing, transmission, and sharing, which had a huge impact on people's daily lives [14]. Computer multimedia technology can integrate images, sound, text, and video in communication, and the three-dimensional nature of communication far surpasses traditional communication. Computers also make significant contributions in the industrial field, and many enterprises have relied on technology to expand their markets and generate more sales. At the same time, they have also strengthened personnel recruitment and job training. It can be said that computer multimedia technology has injected vitality into many enterprises.

3. Ideas for News Dissemination

3.1 Training of Journalism and Communication Talents

Any industry cannot do without the participation of talents. Li Q believes that the news and communication industry has undergone significant changes in content, technology, and other aspects,

placing higher demands on news and communication talents [15]. The talent cultivation model based on the ecosystem perspective can bring vitality to the talent cultivation of the news and communication industry. Firstly, it is possible to break away from the traditional beliefs of most teachers and students, so that their teaching is no longer limited to books, but rather to strengthen practical education. Secondly, it is necessary to establish a complete training system. The teaching staff of news media majors in many universities are not abundant enough, and the curriculum arrangement and quality are not excellent enough. These universities should update their textbooks, offer new professional courses, and try to combine them with quality education. Finally, through this approach, a "ecosystem" of talent cultivation is established, which involves multiple entities such as universities, students, families, governments, research institutions, and the Ministry of Education, working together to develop a cooperative and win-win education model.

Table 1. Training model for composite applied talents in news and communication

	Macro Approach	Micro Approach
Higher Education	Improving Classroom Methods - Innovation	Improving the Curriculum System - Science
Professional Media	Cultivating Journalism Talents - Market	Reporting on Issues Related to Educational Models - Supervise
Employers	Developing Professional Skills - Practical Practice	Building a New Working Mode with Old Employees - Diversified

From Table 1, it can be seen that this composite applied talent cultivation model can mainly be divided into three aspects: university education, professional media, and employers. University education needs to improve classroom learning mode and curriculum teaching system from an innovative perspective. Professional media, on the other hand, need to cultivate news talents, which requires market orientation. They should also actively report on various issues that arise in the education model and play a certain regulatory role. Employers need to cultivate professional abilities for talents and withstand practical tests. It is best to use the old to lead the new and accelerate the growth rate of new employees.

3.2 Transition from Traditional Media to New Media

The core of news communication is mainly "dissemination". Previously, traditional media mainly relied on paper media such as newspapers and publications, but later emerged with products such as radio and television. With the development of technology, advanced internet technology has completely informationized the media industry. Holt Kristoffer once proposed the concept of alternative news media [16]. Now various social platforms, WeChat official account and short video platforms are all ways of news dissemination, and this high popularity has also led to the emergence of "We Media", an emerging product. The We Media industry has enabled more ordinary people to participate in the daily communication of informatization, which has been widely recognized. Xu X H expressed affirmation in his research. He believes that new media, with its strong timeliness and content that is close to the lives of the masses, can better gain their recognition [17].

The gradual development of traditional media towards new media is the trend of the times, and Mao S Z believes that changes in news dissemination and news education are extremely necessary [18]. This is mainly reflected in helping to cultivate useful news talents and meeting the development needs of the times. Compared with new media, traditional media is not completely useless. ReNa M T L F once proposed that traditional media and new media have their own advantages, and the two should be integrated and developed [19].

Table 2 mainly shows the advantages of traditional media over new media. It is not difficult to see that traditional media has three major advantages: stable environment, high credibility, and strong inclusiveness. The so-called environmental stability refers to the fact that traditional media has a certain degree of influence, which relies on their long-term information dissemination. They themselves have a certain degree of authority, so high credibility is also natural. Their strong inclusivity is mainly due to the difficulty of public speaking, and the information compiled by traditional media would try to cater to the majority of people. In contrast, new media has not done well in these aspects. Due to the fact that most new media is self-media, the threshold for self-media is becoming lower and lower today. Without a popular foundation, it is difficult to start from scratch. Moreover, due to its lack of authority, if self-media publishes a news without posting the original news link, the credibility of its content is actually not high. In addition, major social media platforms now have preference push functions based

on big data, and each new media account has a designated audience for information delivery. Most of them have the same taste and views.

Table 2. Advantages of traditional media over new media

Traditional Media	New Media
Environmental Stability	Difficult to Start
High Credibility	Low Credibility of Self Media
Strong Inclusiveness	Generally Designated Audience for Push

Table 3. Advantages of new media over traditional media

New Media	Traditional Media
Fast Propagation Speed	Low Propagation Speed
Wide Dissemination Range	Limited to Local Areas
Strong Interactivity	Almost No Interaction

From Table 3, it can be seen that there are several major advantages of new media, which are very distinctive of the internet. That is to say, the speed of dissemination is fast, the scope of dissemination is wide, and the interactivity is strong. The first two are needless to say, and the information dissemination ability of the information age is naturally far stronger than that of traditional media. In terms of interactivity, new media is also stronger than traditional media, as media account bloggers can easily communicate with viewers in the comment section, while interaction between traditional media is obviously much more troublesome. If it's a newspaper, readers need to write letters or submit articles. If it's a radio or television broadcast, viewers need to call a hotline or edit text messages, which is far less convenient than new media. Based on the two tables, the advantages of new media are mainly reflected in their ability to disseminate and interact information. Traditional media, on the other hand, has a higher threshold, making its information content more easily accepted by most people and having higher credibility. For the combination of the two, this article believes that a certain degree of regulation should be implemented on new media to ensure the accuracy of information for most self media and small media, so that new media can balance the advantages of both media dissemination modes.

4. Application of ARA Algorithm in Multimedia

The so-called ARA is also known as Ant Colony-based Routing Algorithm, and Zhang J Y used the improved ARA in the multimedia CDN (Content Delivery Network) [20].
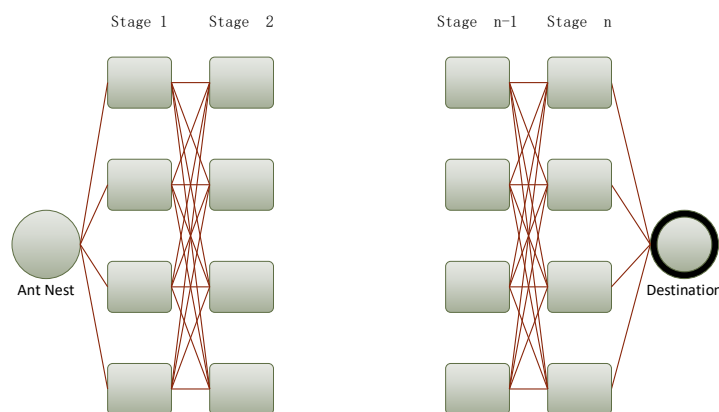

Figure 2. Simulation of Improved ARA

As shown in Figure 2, the principle of ARA is actually to simulate the travel path of the ant colony. According to the calculation needs, several stages and the walking possibilities of each stage are listed, and finally all the route possibilities are calculated using permutation and combination. The algorithm also believes that ants use pheromones to communicate with each other. Whenever ants reach a new node in a new stage, they would choose their route based on the different pheromone values of each node and move towards a higher pheromone value direction.

In the above research, ARA algorithm is also used to compare with RIP (Routing Information Protocol). The comparison method is that the two algorithms send 20 ants every 30 seconds and record

the cumulative hit rate every 500 seconds. The comparison results are as follows [21].
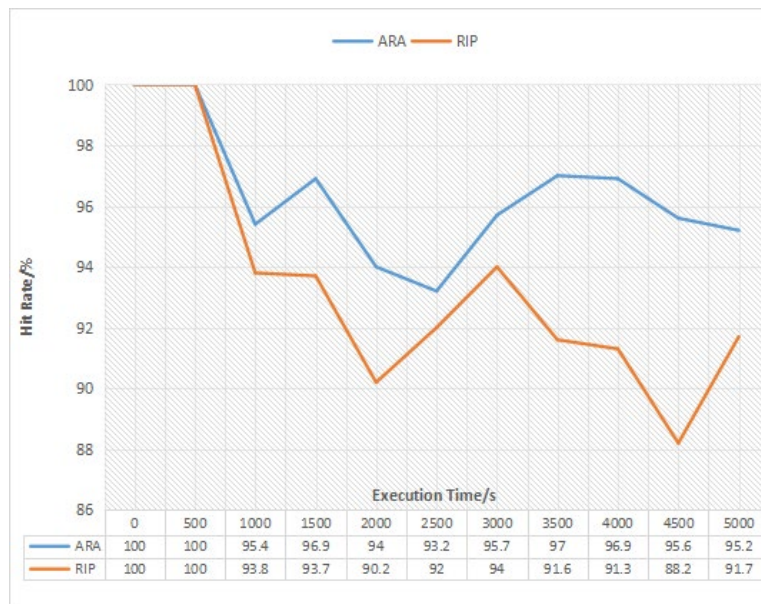

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
ARA	100	100	95.4	96.9	94	93.2	95.7	97	96.9	95.6	95.2
RIP	100	100	93.8	93.7	90.2	92	94	91.6	91.3	88.2	91.7

Figure 3. Comparison between ARA and RIP algorithms

According to the comparison results in Figure 3, it was not difficult to see that the overall hit rate of ARA was higher than that of RIP. Both algorithms had a hit rate of 100% at 0-500 seconds [22]. That's because at the beginning of the simulation, both algorithms requested the routing system to distribute multimedia content to edge servers and stored the information of multimedia content in their databases. The subsequent change in hit rate was due to changes in the content in the edge server and incorrect data in the content database. After this situation occurred, the hit rate of ARA was basically controlled between 93%-97%. In contrast, RIP was only between 88%-94%, so ARA had a higher redirect hit rate than RIP.

5. Conclusions

After analyzing multimedia network technology and news dissemination, it is not difficult to see that the trend of news dissemination requires the use of new media such as various social platforms, and multimedia network technology happens to be the underlying tool of these platforms. This combination has actually occurred. People are increasingly subscribing to newspapers and watching radio or television programs in their daily lives, and instead use their phones or computers to log in to major platforms anytime and anywhere to obtain massive amounts of information. This change in lifestyle habits is a sign of the combination of news dissemination and multimedia network technology. In the future, this article believes that the development of information dissemination on the Internet would tend to be extreme, and it may even be possible to accurately push to various users without the need for users to actively search. Moreover, the combination of audio, video, and text would be better, thus allowing users to output information in a comprehensive and three-dimensional manner, reporting news and information from various places. However, the consequences of doing so are also evident, and users are becoming more and more easily able to access information. The ability to actively seek information weakens and gradually becomes trapped in the information room. Therefore, users need to not only enjoy the convenience of multimedia network technology, but also try to restore some attention and use of traditional media, so that they can have more thinking.

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