

# *Innovative Development of Radio and Television News from the Perspective of Media Integration*

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**Abstract:** Based on the perspective of media integration, this paper delves into the innovative development of radio and television news. In the era of media integration, radio and television news faces challenges such as content homogeneity and decreased audience participation, but at the same time, it also faces opportunities for multimedia content innovation and cross platform dissemination. In order to better adapt to the trend of media integration, this article proposes a multi platform reporting model, which achieves efficient dissemination of radio and television news between multiple platforms through formula and algorithm design. This model aims to improve production efficiency, accelerate content dissemination speed, and optimize content to enhance its influence. The article also designed algorithms to enhance interactivity and engagement to enhance user experience, as well as a formalized optimization model for multimedia expression. By using a mixed structure to process images, videos, and text, news content becomes more diverse and attractive.

## **1. Introduction**

With the continuous evolution of the information age, media integration has become an important trend in the global media field. From traditional broadcasting and television to the rise of digital media, the characteristics of diversified media forms and interconnectivity are gradually emerging. In this context, media integration, as an emerging way to comprehensively integrate multimedia resources, is profoundly affecting the dissemination pattern of radio and television news. Media convergence is a product of the deep integration of information technology and the media industry. It connects previously independent media forms such as television, radio, newspapers, etc. through digital technology and networks, forming a highly interconnected media system. This trend provides unprecedented opportunities for radio and television news, but also brings new challenges. Traditional radio and television news faces various challenges, including content homogeneity, decreased audience participation, and fierce competition [3-5]. However, with the development of digital media, radio and television news has also ushered in huge opportunities, such as multimedia content innovation and cross platform dissemination, injecting new vitality into it.

In the context of media convergence, based on the understanding of the impact of media convergence, this article will attempt to propose a multi platform reporting model, aiming to achieve efficient dissemination of radio and television news content between multiple platforms

through formula and algorithm design, in order to meet the development needs of media convergence. This model is not only helpful to solve the problems faced by traditional radio and television news, but also an active exploration of the development of radio and television news in the era of media convergence.

## 2. Literature review

In the field of media integration, scholars have diverse definitions of this concept. Media convergence is widely understood as the deep integration between information technology and the media industry, aimed at integrating originally independent media forms, achieving seamless content connection and cross platform dissemination [1-2]. In the development process, media convergence has experienced the expansion from a single media form to digital, Internet and other multimedia forms, and gradually formed a complex system covering multiple levels and dimensions [3]. Radio and television news, as a representative of traditional media, faces a series of challenges and opportunities in the era of media integration. At present, the traditional production model of radio and television news has problems such as high content homogeneity and low audience participation, which gradually limits the dissemination effect [4-6]. However, the rise of digital media has also brought opportunities for radio and television news, such as multimedia content innovation and real-time dissemination, injecting new development momentum into it [7]. The existing multi platform reporting models mainly focus on attempting to present radio and television news content on different platforms to meet the needs of different audiences. These models have proposed some beneficial ideas in theory and practice, but there are also some limitations. This includes issues of content homogeneity, and some models are still limited by the traditional content production model of news, resulting in a lack of innovation and differentiation in the content presented on multiple platforms. (2) Poor technological adaptability: With the continuous progress of technology, some existing multi platform reporting models may not be able to effectively cope with new technological challenges, such as artificial intelligence, big data, etc. (3) Limited audience interaction: Some models still lack effective mechanisms to promote interaction and feedback between the audience and news content when considering audience participation [8-10].

## 3. Multi-platform reporting model

In order to effectively achieve media integration, this paper proposes a multi platform reporting model based on multi-channel communication. This model aims to ensure seamless dissemination, consistency, and fluency of radio and television news content across different platforms, thereby meeting the information acquisition needs of audiences in various media environments. Through the design of models, the aim is to improve the production efficiency of radio and television news, accelerate the speed of content dissemination, and optimize content to enhance its influence, making news more attractive and credible[11-12].

### 3.1 Model Definition

Considering the characteristics of different platforms, this article defines a multi-channel propagation model, where each platform is considered as a channel. Set the propagation process as:

$$X_{t+1}^i = \alpha \cdot X_t^i + \sum_{j=1}^N \beta \cdot W_{ij} \cdot X_t^j \quad (1)$$

Among them,  $X_t^i$  is the information dissemination status on the  $i$ -th platform at time  $t$ ,  $W_{ij}$  is the impact weight of platform  $j$  on platform  $i$  and  $\alpha$  and  $\beta$  represent the attenuation

coefficients of information self-propagation and cross platform propagation, respectively [13].

### 3.2 Algorithm for improving interactivity and engagement

The interactivity and engagement enhancement algorithm aims to recommend news content those better suits the interests of users based on their personalized feedback, and improve user engagement through interactive content design [14].

Set the feature vector of user feedback as  $F = [f_1, f_2, \dots, f_n]$ , where  $f_i$  represents the user's level of interest in different news content. This article designs a recommendation algorithm based on collaborative filtering:

$$R(u, i) = \frac{\sum_{v \in N(u)} sim(u, v) \cdot (f_i - \bar{f}_v)}{\sum_{v \in N(u)} sim(u, v)} + \bar{f}_u \quad (2)$$

Among them,  $R(u, i)$  represents the estimation of user  $u$ 's interest in news  $i$ ,  $N(u)$  represents a set of users similar to user  $u$ ,  $sim(u, v)$  is the similarity between users  $u$  and  $v$ ,  $\bar{f}_v$  and  $\bar{f}_u$  represent the average interest of user  $v$  in all news and user  $u$  in all news, respectively.

### 3.3 Multimedia expression formal optimization model

This article uses a hybrid structure of convolutional neural networks and long short-term memory networks for multimodal information processing of images, videos, and texts. The loss function of the model includes aspects such as content quality, platform adaptability, and audience feedback.

$$L = \lambda_1 \cdot ContentQualityLoss + \lambda_2 \cdot PlatformAdaptationLoss + \lambda_3 \cdot AudienceFeedbackLoss \quad (3)$$

By training the model with a large amount of cross platform and audience feedback data, it can learn to generate the optimal multimedia expression form to meet the needs of different platforms and audiences. Figure 1 shows Hybrid training model diagram of convolutional neural network and long short-term. Among them, the input layer includes the input of multimodal information such as images, videos, and texts. Convolutional neural networks are used to process image and video information and extract visual features. Long short-term memory networks are used to process text information and capture semantic information in text sequences. The multimodal fusion layer can fuse the outputs of CNN and LSTM to generate multimodal representations. The platform adaptability optimization layer adjusts the multimodal expression form to better adapt to the characteristics of different platforms. The content quality optimization layer optimizes the content quality of the generated multimedia expression form, ensuring the accuracy and attractiveness of information. The audience feedback optimization layer integrates audience feedback information, adjusts model parameters to improve audience satisfaction. The loss function includes multiple aspects such as content quality, platform adaptability, and audience feedback, which are used to guide the training of the model.

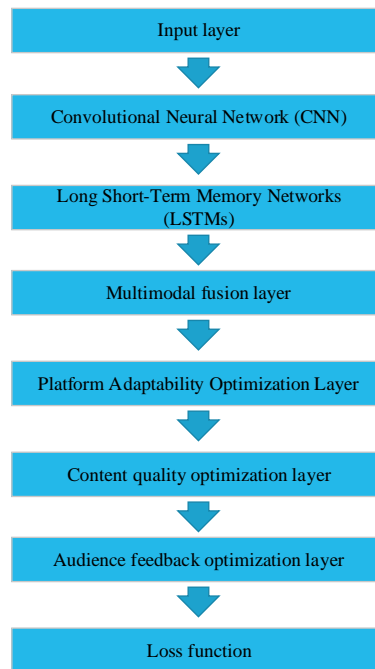


Figure 1: Hybrid training model diagram of convolutional neural network and long short-term

Through the training of this hybrid model, the system can learn how to generate the optimal multimedia expression form to meet the needs of different platforms and audiences. The model architecture includes multimodal processing of images, videos, and text, as well as the design of optimization layers, aiming to comprehensively enhance the multimedia expression effect of news content.

#### 4. Analysis of the effectiveness of multi-platform reporting models

In order to verify the effectiveness of the model proposed in this paper, the dissemination of news on online social networks was taken as the research object, and relevant data on the forwarding of a news story titled "Tornado Attacks Kaiyuan, Liaoning" was collected through the news micro hotspot function. The news was released on July 3, 2019 at 18:03 and attracted high attention. It was later forwarded by official media accounts such as People's Daily and Headline News, continuing to spark social media discussions. The news reached its peak at 8:00 am on July 4, 2019, and gradually weakened before calming down approximately 42 hours later. This article takes every 2 hours as a time step and calculates the proportion of disseminators in the network within 60 hours, constructing a real news network. In order to conduct simulation experiments, this article adopts a data mining model and conducts linear, interactive, and comparative model simulation experiments on the same network. Specifically, this article trained 10 real news and 10 fake news, generating a news simulation network with node credibility. Due to the news being forwarded more than the threshold, this article sets the initial value to 1.0. Through model fitting, this article obtained simulation data of data mining models, and compared the simulation results of linear models, interactive models, and comparative models on the same network. From Figure 2, it can be observed that the simulation results of the data mining model are very close to the real data, while the linear model is closer to the overall trend, but there is some deviation when the peak occurs. The data mining model can better fit the overall propagation situation of real events, although there is a certain difference between its predicted value and the true value during the propagation end time period.

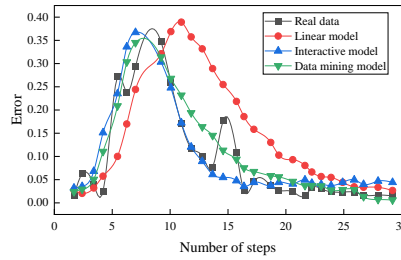


Figure 2: Model comparison results

In order to quantitatively analyze the simulation performance of different models, this paper calculated indicators such as root mean square error, Pearson coefficient, and cosine similarity, and summarized the experimental results in Table 1. By comparing the experimental results, this article can more clearly evaluate the simulation performance of each model, further verifying the effectiveness of the proposed model in predicting news dissemination.

Table 1: Comparative experimental results

Model metrics	RMSE	Pearson correlation coefficient	Cosine similarity
Data mining model	0.0408	0.9334	0.9596
Linear model	0.0979	0.7485	0.8547
Interactive Model	0.0565	0.8605	0.9166

The RMSE value of the data mining model is 0.0408, the Pearson correlation coefficient is 0.9334, and the cosine similarity is 0.9596. The RMSE value of the linear model is 0.0979, the Pearson correlation coefficient is 0.7485, and the cosine similarity is 0.8547. The RMSE value of the interaction model is 0.0565, the Pearson correlation coefficient is 0.8605, and the cosine similarity is 0.9166. The data mining model has the smallest RMSE value, the largest Pearson correlation coefficient, and the largest cosine similarity, which means that the proposed data model has the smallest deviation from the real data. Therefore, it can be said that the multi platform reporting model proposed in this paper more accurately simulates the propagation process of real events than other models, and reflects the law of news dissemination on the Internet.

## 5. Conclusion

Through in-depth research on the innovative development of radio and television news from the perspective of media integration, this paper proposes a news dissemination optimization framework based on a multi-platform reporting model. In implementation, through data collection, algorithm implementation and optimization, as well as model deployment and integration, this article successfully built a multi-platform reporting model, which is expected to improve the content diversity, audience participation, and dissemination effect of radio and television news.

The development of future radio and television news will rely more on digital technology and media integration. With the popularization of 5G technology and the development of artificial intelligence, radio and television news will face more innovative opportunities. Driven by new technologies, this article can expect more efficient news production, more personalized content recommendations, wider audience participation, and more comprehensive cross platform reporting. Future radio and television news will focus more on user experience and be more flexible in adapting to the needs of different audiences.

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