A Semi-Supervised Learning-based Method for Information Dissemination in Online Fusion Media

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Abstract: - Conventional information dissemination methods of online media mainly use the Susceptible Infective Removal model to describe the transformation relationship of information dissemination, which is easily affected by false delay stabilization, resulting in a low dissemination influence index. To solve the above problems, this paper proposes an information dissemination method of online media based on semi-supervised learning. That is to locate the source of network media information dissemination and use semi-supervised learning to design the network media information dissemination algorithm, thus realizing the network media information dissemination. The experimental results show that the designed semi-supervised learning communication method of network financial media information has a high communication influence index, good communication effect, high efficiency, and certain application value, and has made certain contributions to improving the comprehensive quality of network financial media information communication.

Key-Words: - Semi-supervised learning, Web, Integrated media, Information, Dissemination, Communication impact index, Information propagation algorithm.

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1 Introduction

Network fusion media is a new type of fusion media, which has a variety of media forms and can realize the diversified and interactive integration of information. Network financial media includes text, pictures, audio, and other types, which have a wide range of applications and important interactive significance. With online financial media, users can obtain the latest information, [1] in real-time, and can also conduct data analysis and positioning according to their own needs to ensure the matching participation of marketing promotion. In the context of information development, network media is developing faster and faster. The application of cloud computing and other technologies has also promoted the transformation of network media, providing more effective support for it. At present, there are five main ways for network media to spread. One is the network news platform, including news websites, clients, etc.; The second is social media, including WeChat and TikTok, which are highly interactive; The third is video sharing platforms, including bilibili, iQIYI, etc., which mainly focuses on movies, TV dramas, etc.; The fourth is the audio platform, including Himalayan audio books; The fifth is the live broadcast platform, including fighting fish, tiger teeth, etc. The communication characteristics of different communication channels are different, so it is necessary to study a highly targeted network media information communication method.

As a matter of fact, online media communication focuses on effectiveness, interactivity, and participation, and needs to be supported by multimedia. Relevant researchers have designed several conventional methods of online media communication based on the characteristics of online media communication. Literature [2] considered social media data to determine the interactive coverage relationship of information, which improved the loyalty of information dissemination in online media, but the information sources of online media platforms are complex, and it is easy to have the problem of information overload. Literature [3] uses network media technology to digitize the information of integrated media, which enhances the user's sense of participation, but the openness and anonymity of this method are too strong to ensure the value of information screening, and there is a risk of communication obstruction or information leakage. Literature [4] proposes a semantic enhanced multimodal fusion network for fake news detection. The multimodal fusion network extracts deep features from texts and images and fuses them into a

common semantic feature called a snapshot. The event domain adaptive network can select and remove the unique features of each event and keep the shared features among events. but the information fragmentation of this method is obvious, and it cannot guarantee the influence of the communication of integrated media. Literature [5] combines the theory of intermediary group contact to positively transmit online media information to various groups to enhance the audience's sense of participation and satisfaction, but this method may exacerbate the negative emotions of the communication group's conflict domain, which is not in line with the current requirements for the transmission of information in the integrated media. Combined with the above problems, this paper proposes a semi-supervised learning-based information dissemination method for online integrated media. Compared with the current research, the main contribution of this method is to calculate the communication connectivity factor according to the mobility of media information dissemination, get the network media information dissemination source node, locate the network media information dissemination source, use semi-supervised learning to predict the remaining dissemination labels, get the complex dissemination data set, design the dissemination projection function, extract the characteristics of coverage information dissemination data, and then design the network media information dissemination algorithm to realize the network media information dissemination. Through the experiment, it is concluded that the method in this paper has high communication intermediary centrality, close communication centrality, and communication influence, and has good communication effect.

2 Design of a Semi-Supervised Learning-Based Method for Information Dissemination in Online Fusion Media

2.1 Positioning the Source of Information Dissemination of Online Fusion Media

The structural attributes of the fusion media network are complex, and it is necessary to carry out propagation estimation according to the information dissemination source to improve the centrality of the information dissemination nodes, therefore, this paper locates the information source of the network fusion media, [6]. First of all, random sampling can be carried out according to the network topology composition structure to simplify the cumbersome calculation process, [7] at this time, the integrated media network can be represented by a collection of nodes G, as shown in (1):

$$G=(V,E,P) \tag{1}$$

In equation (1), V,E,P the representatives represent different propagation matrix edges respectively, in the real propagation scenario, the probability of different information propagating to the neighboring nodes is different, [8] and the independent relationship of the source nodes can be assumed to optimize the propagation diffusion process, [9] at this time, the propagation mobility is shown in the following Figure 1.

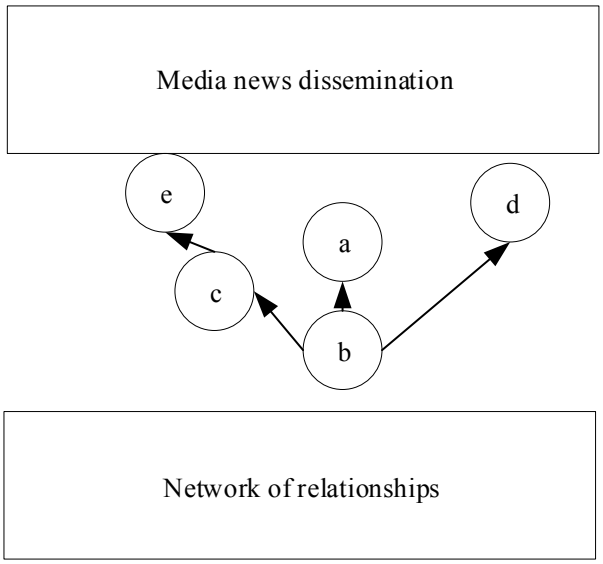

Fig. 1: Schematic diagram of the mobility of information dissemination through integrated media

As can be seen from Figure 1, the data from the relational network will complete the fast propagation through different propagation paths, [10], at this time the propagation connectivity factor M is shown in (2):

$$M=\left|\frac{\sqrt{C}}{W}\right| \tag{2}$$

In equation (2), C represents the data connectivity metrics, [11]. W represents the liquidity coefficient. The network media information dissemination source has strong matching observability, [12], which can divide the potential propagation space according to the spatial

embedding time of nodes, and adjust the input and comparison input AE network, [13].

Assuming that the initial propagation diffusion moment is 0, the information receiver at this time will be randomly selected, [14], and the candidate distance of the propagation source will be adjusted according to the specified range, [15]. If the random reachable path of propagation occurs reverse diffusion, then any propagation node has propagation infectivity, based on this, the obtained network fusion media information propagation source node a_{my} is shown in (3):

$$a_{my} = \frac{\left|\left\{L_j \square i_j\right\}\right|}{K} \tag{3}$$

In equation (3), L_j represents the reachable path from the randomly propagated node, the i_j represents the reachable path from the center node, the K represents the weights of candidate propagation nodes, [16], combined with the above propagation source nodes can determine the random association paths and calculate the degree of propagation similarity, so as to improve the propagation wall of propagation vectors and ensure the quality of the propagation of the integrated media information.

2.2 Designing Algorithms for Information Dissemination in Online Fusion Media based on Semi-Supervised Learning

Semi-supervised learning is an important research direction in the field of pattern recognition and machine learning. Combining the characteristics of supervised learning and unsupervised learning, a small amount of labeled data and a large amount of unlabeled data are used to train the model to improve the performance and generalization ability of the model, [17]. Therefore, based on semi-supervised learning, this paper designs an information dissemination algorithm for network-integrated media.

Semi-supervised learning improves the generalization ability of the model by using unlabeled data, and makes it perform better on new samples, [18]. Semi-supervised learning assumes that there are certain model assumptions in the data distribution, through which learners can be established to predict the labels of unlabeled samples, [19]. On the one hand, the advantage of semi-supervised learning is to improve the performance of the model: using unlabeled data can make the model learn more robust and generalization features, thus improving the performance of the model on the test set, [20]. On the other hand, it is to reduce the labeling cost: compared with the situation that supervised learning needs a lot of labeled data, semi-supervised learning can train the model with less labeled data and a lot of unlabeled data, thus reducing the labeling cost.

Semi-supervised learning can be used to improve the efficiency and accuracy of information dissemination in network-integrated media information dissemination, [21]. Use a small number of marked information communication cases (such as successful or failed communication cases) and a large number of unlabeled information communication data (such as posts and comments on social media) to train the information communication model, [22]. Through semi-supervised learning, the model can learn the general laws and characteristics of information dissemination, to predict the effect and trend of information dissemination more accurately. Firstly, we need to construct the initial network fusion media information dissemination collection into a complete dissemination graph, [23], at this time, we can use semi-supervised learning to predict the remaining dissemination labels, and the complex dissemination dataset S is obtained as shown in (4):

$$S = \left(S_1, S_2, ..., S_n\right) \tag{4}$$

In formula (4), S represents the cross data set of financial media communication information, and n represents the number of subsequent data in the training set. At this time, the communication characteristics of different types of financial media information are different, and the communication projection function $dist(f, si, sj)$ can be designed according to the information communication channel, as shown in (5):

$$dist(f, si, sj) = \left|\frac{sif - sjf}{\max f - \min f}\right| \tag{5}$$

In equation (5), sif represents the data characterization relationships of the propagation samples, the sjf represents the temporal characterization of the relationship between the propagation samples, the $\max f$ represents the maximum value of the training set, [24], the $\min f$ represents the minimum value of the training set, at this time the extracted features of the coverage information dissemination data are shown in Table 1.

Table 1. Coverage of fusion media information data dissemination feature extraction

Step	Content
Input	Input S, V set
Output	Data collection search(red)
1	Calculate the relationship between attribute value and domain(N_a)
2	Initialize
3	Calculate the dependency of feature attributes and select the data that meets the condition(a_i)
4	$Sig\left(a_j, A, red\right) = \max\left(Sig(a_i, A, red)\right)$ Observe whether it is satisfied, and return if it is not 2
5	The reduced data set is obtained S_{red}
6	end

As can be seen from Table 1, the weight $W^{'}(f)$ of each communication message in the communication dataset at this point is shown in (6):

$$W^{'}(f) = W(f) - \frac{dist\left(f, st, R_{near}\right)}{k} - \frac{dist\left(f, st, R_{far}\right)}{k} \quad (6)$$

In equation (6), $W(f)$ represents the basic propagation weight, k represents the stable propagation coefficient, $dist\left(f, st, R_{near}\right)$ represents the propagation projection of this training sample in the feature function at this time, [25], $dist\left(f, st, R_{far}\right)$ then represents the nearest projection of the propagation sample. Based on this, the designed algorithm Q for information dissemination of networked fusion media is shown in (7):

$$Q = \frac{\sum_{i=1}^{n} W^{'}(f).S_{train}}{\alpha} \quad (7)$$

In equation (7), S_{train} represents the cross-coverage propagation matrix, α represents the propagation parameters, using the above-designed algorithm for the propagation of network integrated media information can effectively divide the propagation constraint distance and adjust the absorption state of the propagation nodes, in addition to the independence of the different propagation nodes, which need to be adjusted according to the comprehensive convergence relationship, to reduce the complexity of the propagation of the information of integrated media, and to reduce the risk of the propagation of the information of integrated media, [26].

3 Experiment

In order to verify the dissemination effect of the designed semi-supervised learning-based web-based integrated media information dissemination method, this paper configures an effective experimental environment, and compares it with the conventional web-based integrated media information dissemination method considering social media data, and the media function-based web-based integrated media information dissemination method as follows.

3.1 Experimental Preparation

According to the experimental requirements of network media information dissemination, this paper selects the KEKE social platform as the experimental research platform, [27]. KEKE social platform is an application platform with the functions of voice chat, interactive entertainment and social friends. It has a simple and clear user interface and high-quality voice transmission service, attracting a large number of young people and voice social enthusiasts. Android\iOS basic application is set in this platform, which can collect different types of network media information on the server side. A number of different data burial points are set on the server side of the experimental platform. These data burial points work together to collect user access information in real-time, output experimental Socialsitu metadata, and generate an effective experimental dataset. Some information about the experimental dataset is shown in Table 2.

Table 2. Partial information on the experimental dataset

Statistical name	quantity
Socialsitu metadata	1460656
Socialsitu hexatuple metadata	649987
True information	36610
False information	10449
Number of users	28857
Number of forwards	31940
Number of likes	24196
Number of comments	7019

It can be seen from Table 2 that this experiment mainly obtains experimental metadata through the API interface and analyzes the user's behavior mode. The CPU of the experimental platform is Xeon 4116 12C\85W\2.1GHz, and the memory is

256G DDR4 2666MHz. UPX\ASPack\vmpROTECT and Zprotect are used to process the experimental data in parallel. The processing flow is shown in Figure 2.

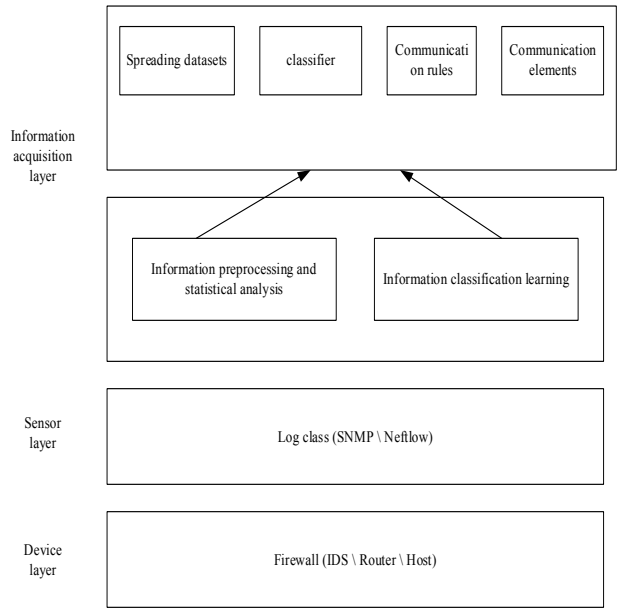

Fig. 2: Parallel processing flow of data

It can be seen from Figure 2 that based on the above data parallel processing flow, the comprehensive processing complexity of experimental information can be determined, and different MSADE node propagation paths can be set, as shown in Table 3.

Table 3. Node propagation paths

Path	Hops	TieStrentgh	α	Distance
ACB	2	3.0312/3.1562	0.9804	0.6344
AFB	2	2.4586/2.5365	0.9665	0.8094
ADEB	3	2.1568/2.3654/2.3651	0.9655	0.1356
CBF	3	2.5265/2.3465/2.5468	0.9346	0.1234
CBE	3	2.3106/2.3254/2.4656	0.9641	0.6344
DEB	3	2.1456/2.3654/2.1487	0.9364	0.3145

It can be seen from Table 3 that the shortest distance of the above propagation paths is inconsistent, but all meet the experimental propagation principle. During the experiment, the information transmission flow needs to be controlled. Therefore, this paper selects the HUS network card for experimental interconnection, and the experimental platform architecture is shown in Figure 3.

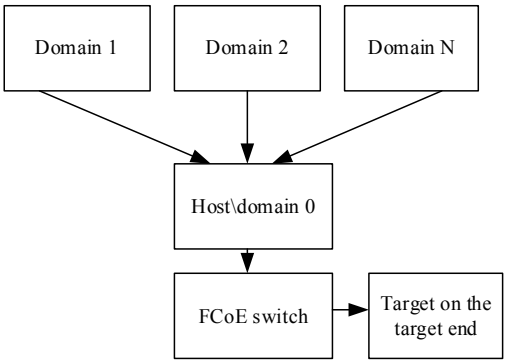

Fig. 3: Architecture of the experimental platform

It can be seen from Figure 3 that the experimental platform has set up a FiO benchmark program, which can meet the I\O communication requirements of different levels. After the above steps are completed, this paper selects the influence of media information communication as the experimental indicator, and the formula H_A is shown in (8):

$$H_A = \frac{S_J}{A} \tag{8}$$

In equation (8), S_J represents the parallel propagation parameter, A represents the propagation control differential, the higher the influence index of information dissemination of integrated media proves that the information dissemination effect is better, and vice versa proves that the dissemination effect is poorer, and after the experimental indexes have been confirmed, the accurate experimental results of information dissemination can be obtained.

3.2 Experimental Results and Discussion

Combined with the above experimental preparation and selected experimental indicators, we can conduct the experiment of financial media information dissemination, that is, preset different financial media information dissemination events, respectively using the online financial media information dissemination method based on semi-supervised learning designed in this paper, and consider the online financial media information dissemination method of social media data, As well as the network media information dissemination method based on the media function, CELF++software is used to analyze the media centrality and tight centrality of the three methods. The experimental results are shown in Table 4 (Appendix).

From Table 4 (Appendix), it can be seen that for most events, the network multimedia information dissemination method based on semi-supervised learning shows high values in two indicators: the centrality of communication intermediary and the centrality of communication. In event 1, event 2, event 3, etc., the centrality of the communication medium and the centrality of close communication of this method are obviously higher than those of the other two methods. The network-integrated media information dissemination method considering social media data and the network integrated media information dissemination method based on media function is relatively poor in two centrality indicators, and there is little difference between them. Generally speaking, the network multimedia information dissemination method based on semi-supervised learning shows a high degree of dissemination in all events. Based on this, it can be concluded that the network multimedia information dissemination method based on semi-supervised learning has the highest dissemination centrality, which shows that this method can make more effective use of and disseminate intermediaries in the process of information dissemination and realize closer information dissemination.

Formula (8) is used to calculate the experimental indicators of communication influence of the three methods, and the experimental results obtained are shown in Table 5 (Appendix).

As can be seen from Table 5 (Appendix), for most events, the information dissemination method based on semi-supervised learning has the highest dissemination influence index. Especially in Event 1, Event 5, Event 9, and Event 10, the propagation influence index of this method is obviously higher than the other two methods. In some events, the dissemination influence index of the network-integrated media information dissemination method considering social media data and the network integrated media information dissemination method based on media function is similar, but there are significant differences in other events. Generally speaking, the information dissemination method of network comprehensive media based on semi-supervised learning has shown relatively high communication influence in all events. Based on this, it can be concluded that the information dissemination method based on semi-supervised learning has the highest dissemination influence. It shows that the semi-supervised learning method is an effective strategy when considering improving the communication effect of media information. The communication effect of this method is good, reliable, and has certain application value.

4 Conclusion

With the increasing popularization of Internet technology, the Internet has gradually become an important place for people to obtain information, transmit and communicate, and express their emotions. At the same time, the dissemination potential of networked media information has increased dramatically and has been widely applied in various fields. Through online media information, people can obtain media content in real-time, generate targeted recommendation information chains, and improve communication feedback. Due to the interactive and instantaneous requirements of networked media information dissemination, most of the conventional dissemination methods have poor authenticity and obvious problems of dissemination efficiency and dissemination security, which limit the development of networked media, therefore, this paper designs an effective networked media information dissemination method based on semi-supervised learning. Therefore, this paper designs an effective network-integrated media information dissemination method based on semi-supervised learning. The method in this paper is excellent in many aspects. Specifically, the method has a high degree of media center, which means that it can effectively use and spread media in the process of information dissemination and promote the wide spread of information. At the same time, this method has a high degree of communication compactness, which indicates that it can achieve closer information dissemination and make information reach the target audience more quickly. In addition, the communication influence of this method is relatively high, which further proves its effectiveness in improving the communication effect of media information. To sum up, this method has a good communication effect and provides new ideas and methods for media information dissemination.

References:

[1] Liu Y, Fan C S, Liu P X.Research on Digital Media Intelligent Art Creation Based on the Fusion of Virtual Reality and Semantic Features. *Journal of information science and engineering: JISE*, Vol. 39, No. 1, 2023, pp. 55-66. DOI: 10.6688/JISE.202301_39(1).0004.

[2] Timakum T, Song M, Kim G. Integrated entitymetrics analysis for health information on bipolar disorder using social media data and scientific literature. *Aslib Journal of Information Management*, Vol. 75, No. 3,

2023, pp. 535-560. DOI: 10.1108/AJIM-02-2022-0090.

[3] Yan CF. The Integrated Innovation of Network Media Technology and Ideological and Political Education in Colleges and Universities in the New Era. *Journal of Northeastern University (Social Science)*, Vol. 24, No.4, 2022, pp. 137-144. DOI: 10.15936/j.cnki.1008-3758.2022.04.017.

[4] Li S, Yao T, Li S,Yan L.Semantic-enhanced multimodal fusion network for fake news detection. *International journal of intelligent systems*, Vol. 37, No.12, 2022, pp. 12235-12251. DOI:10.1002/int.23084.

[5] Wong NCH, Massey ZB, Barbarti JL, Bessarabova E. Banas JA. Theorizing Prejudice Reduction via Mediated Intergroup Contact. *Journal of Media Psychology*, Vol. 34, No.2, 2022, pp. 89-100. DOI: 10.1027/1864-1105/a000338.

[6] Singh N, Banga G. Media and information literacy for developing resistance to 'infodemic': lessons to be learnt from the binge of misinformation during COVID-19 pandemic. *Media, Culture & Society*, Vol. 44, No.1, 2022, pp. 161-171. DOI: 10.1177/01634437211060201.

[7] Luo Y, Ma J, Yeo CK. Identification of rumour stances by considering network topology and social media comments. *Journal of Information Science*, Vol. 48, No.1, 2022, pp. 118-130. DOI: 10.1177/0165551520944352.

[8] Wang Y. When Relationships Meet Situations: Exploring the Antecedents of Employee Communication Behaviors on Social Media. *Social Science Computer Review*, Vol. 40, No.1, 2022, pp. 77-94. DOI: 10.1177/0894439320904719.

[9] Winkle C V, Corrigan S. Communicating on social media during a #FestivalEmergency. *International Journal of Event and Festival Management*, Vol. 13, No.2, 2022, pp. 144-163. DOI: 10.1108/IJEFM-06-2021-0054.

[10] Lee M, Lee J, Jeong M, Shin HH. Assessing brand performance consistency from consumer-generated media: the US hotel industry. *International Journal of Contemporary Hospitality Management*, Vol. 35, No.6, 2023, pp. 2056-2083. DOI: 10.1108/IJCHM-12-2021-1516.

[11] Richardson I, Hjorth L, Piera-Jimenez J. The emergent potential of mundane media: PlayingPokémon GOin Badalona, *Spain. New Media & Society*, Vol. 24, No.3, 2022, pp. 667-683. DOI: 10.1177/1461444820965879.

[12] Pullen E, Jackson D, Silk M. Paralympic Broadcasting and Social Change: An Integrated Mixed Method Approach to Understanding the Paralympic Audience in the UK. *Television & New Media*, Vol. 23, No.4, 368-388. DOI: 10.1177/15274764211004407.

[13] Ji C, Yang P, Li K. How customers respond to social media advertising. *Marketing Intelligence & Planning*, Vol. 41, No.2, 2023, pp. 229-243. DOI: 10.1108/MIP-09-2022-0397.

[14] Xu Y. Evolution of audience duplication networks among social networking sites: Exploring the influences of preferential attachment, audience size, and niche width. *New Media & Society*, Vol. 24, No.9, 2022, pp. 2068-2087. DOI: 10.1177/1461444821993048.

[15] Camilleri MA, Troise C, Kozak M. Functionality and usability features of ubiquitous mobile technologies: the acceptance of interactive travel apps. *Journal of Hospitality and Tourism Technology*, Vol. 14, No.2, 2023, pp. 188-207. DOI: 10.1108/JHTT-12-2021-0345.

[16] Yu H, Tuan HD, Dutkiewicz E, Poor HV, Hanzo L. RIS-aided Zero-Forcing and Regularized Zero-Forcing Beamfoming in Integrated Information and Energy Delivery. *IEEE Transactions on Wireless Communications*, Vol. 21, No.7, 2022, pp. 5500-5513. DOI: 10.1109/TWC.2022.3141491.

[17] Tong J, Shi L, Liu L, Panneerselvam J, Han Z. A Novel Influence Maximization Algorithm for a Competitive Environment Based on Social Media Data Analytics. *Big Data Mining and Analytics*, Vol. 5, No.2, 2022, pp. 130-139. DOI: 10.26599/BDMA.2021.9020024.

[18] Zhang S , Zheng N , Wang D L .A Novel Attention-based Global and Local Information Fusion Neural Network for Group Recommendation. *Machine Intelligence Research*, Vol. 19, No.4, 2022, pp. 331-346. DOI: 10.1007/s11633-022-1336-1.

[19] Chen P, Li Z, Hong Z, Zheng H, Zeng R. Tumor type classification and candidate cancer-specific biomarkers discovery via semi-supervised learning. *Biophysics Reports*, Vol. 9, No.2, 2023, pp. 57-66. DOI: 10.52601/bpr.2023.230005.

[20] Gui Q, Wu X, Niu B. Class-Aware Pseudo-Labeling for Non-Random Missing Labels in Semi-Supervised Learning. *International Journal of Semantic Computing*, Vol. 17, No.4, 2023, pp. 531-543. DOI: 10.1142/S1793351X23640018.

[21] Wang X, Han L, Cheng Y. Autoencoder and Hypergraph-Based Semi-Supervised Broad Learning System. *Acta Electronica Sinica*, Vol. 50, No.3, 2022, pp. 533-539. DOI: 10.12263/DZXB.20210105.

[22] Yu H, Mooney M. Characterizing the as-encountered ground condition with tunnel boring machine data using semi-supervised learning. *Computers and Geotechnics*, Vol. 154, No.2, 2023, pp. 1-21. DOI: 10.1016/j.compgeo.2022.105159.

[23] Zhang T, Yang K, Ji S, Ananiadou S. Emotion fusion for mental illness detection from social media: A survey. *Information Fusion*, Vol. 92, No.1, 2023, pp. 231-246. DOI: 10.1016/j.inffus.2022.11.031.

[24] Lei Y, Liu F, Karimi HR, Chen X. Manifold semi-supervised learning for aluminum electrolysis temperature identification based on regularized hierarchical extreme learning machine. *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, Vol. 236, No.6, 2022, pp. 1109-1118. DOI: 10.1177/09596518221082857.

[25] Albayati MG, Faraj J, Thompson A, Patil P, Gorthala R, Rajasekaran S. Semi-Supervised Machine Learning for Fault Detection and Diagnosis of a Rooftop Unit. *Big Data Mining and Analytics*, Vol. 6, No.2, 2023, pp. 170-184. DOI: 10.26599/BDMA.2022.9020015.

[26] Huo Y, He B, Qiu Zn, et al. Research on netw ork information propagation Law based on so cial network analysis. *Computer Knowledge a nd Technology*, Vol. 19, No.7, 2023,pp. 88-9. DOI:10.14004/j.cnki.ckt. 2023.0487.

[27] KEKE Social Platform, [Online]. https://www.kekeyuyin.com/ (Accessed Date: November 15, 2024).

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

Y. Z. conducted the writing, survey, and data analysis; provided methodological guidance for the study.

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Conflict of Interest

The authors have no conflicts of interest to declare.

APPENDIX

Table 4. Results of the propagation centrality experiment

Integrated media information dissemination event	The network multimedia information dissemination method based on semi supervised learning designed in this article		A Network Integrated Media Information Dissemination Method Considering Social Media Data		Network Integrated Media Information Communication Method Based on Media Function	
	Centrality of communication intermediaries	Close dissemination centrality	Centrality of communication intermediaries	Close dissemination centrality	Centrality of communication intermediaries	Close dissemination centrality
event 1	0.958	0.856	0.655	0.552	0.545	0.424
event 2	0.968	0.888	0.688	0.556	0.554	0.447
event 3	0.954	0.845	0.644	0.585	0.571	0.418
event 4	0.914	0.814	0.651	0.528	0.582	0.425
event 5	0.942	0.821	0.642	0.565	0.556	0.466
event 6	0.955	0.852	0.615	0.552	0.529	0.432
event 7	0.918	0.865	0.623	0.523	0.538	0.453
event 8	0.924	0.832	0.655	0.536	0.566	0.495
event 9	0.966	0.853	0.666	0.569	0.596	0.488
event 10	0.959	0.826	0.628	0.581	0.558	0.496

Table 5. Results of experiments on the dissemination of influence

Integrated media information dissemination event	The communication influence index of the semi-supervised learning-based network integrated media information dissemination method designed in this article.	The Communication Impact Index of Network Integrated Media Information Communication Methods Considering Social Media Data	The Communication Influence Index of Network Integrated Media Information Communication Method Based on Media Function
event 1	1.856	0.855	0.855
event 2	1.549	0.884	0.982
event 3	1.488	0.841	0.746
event 4	1.145	0.852	0.829
event 5	1.514	0.846	0.838
event 6	1.221	0.715	0.864
event 7	1.352	0.729	0.855
event 8	1.535	0.758	0.792
event 9	1.663	0.865	0.786
event 10	1.886	0.836	0.873