Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4, 2768-2781
2025
Publisher: Learning Gate
DOI: 10.55214/25768484.v9i4.6651

Evaluating new media strategy performance through big data and intelligent algorithms

Lin Guo[1], Charlie Quanlin Li[2*]
[1,2]International College, Krirk University, Bangkok 10220, Thailand; liquanlin@126.com (C.Q.L.).

Abstract: The emergence and extensive development of new media have put pressure on traditional media and created inevitable competition between the two sides. The integration of media has come into being, which is the result of social progress. In some respects, the integration and development of media also provide new requirements and higher standards for the modernization and development of media. This kind of integration stimulates and broadens the dissemination path of media information and leads the continuous development of social information resources towards the path of sharing. At the same time, this also points out the direction for the development of traditional media and guides the development of the entire media industry towards a diversified development path. In order to more accurately evaluate the performance of new media strategies, this paper conducts a systematic study using big data technology. Specifically, the article introduces three traditional or new intelligent algorithms to conduct in-depth research on specific new media cases. By predicting 10 independent metric variables involved in the case, the prediction effect of three different algorithms is compared. The comparison results show that the multi-dimensional support vector machine optimized based on the immune algorithm has the best prediction effect. This indicates that big data technology can be effectively applied to the evaluation research of new media strategy performance. At the same time, the algorithms mentioned above can also provide a certain reference for the formulation of coping strategies in the new media era.

Keywords: *Artificial intelligence, Big data technology, Comparison of application effects, New media, Performance evaluation.*

1. Introduction

With the advent of the new century, Internet technology Menke and Schwarzenegger [1] has been developed like never before and has become an important force leading the third industrial revolution. It has had an impressive impact on the world, bringing a whole new experience to the productive lives of people throughout society. New media have emerged and developed rapidly Mehta [2] and Ross [3] influencing people's productive life to a great extent. Through the latest digital interactive technology, new media technology is aided by computer technology and the Internet platform, providing people with new experiences while causing a huge impact on the traditional media industry. It has also changed the traditional media production and dissemination channels, the traditional media collection, and collation. The mode of media information dissemination has been disruptively impacted. In the current social activities, traditional media want to continue to develop, its development concept and ideas must be completely changed.

The development of media can be divided into three stages [4]. The first stage was the print era, when the main media were newspapers and magazines, and the development journey between them was almost simultaneous and parallel. The second stage was the era of radio and television Unwin [5] when mankind entered the age of electronic media, which greatly enriched people's access to and experience of

History: Received: 9 February 2025; Revised: 14 April 2025; Accepted: 17 April 2025; Published: 28 April 2025
* Correspondence: liquanlin@126.com

media news. Entering the new century, the era of electronic computers and networks came, and the medium arrived at the network era. In the computer network era, the news media has changed dramatically compared to the previous two eras [6].

With the advent of the digital age, news has inevitably entered the digital media era. In this context, the development of media integration is an inevitable trend [7]. The previous era of one-to-one relationships is on the verge of ending, and different media are beginning to integrate and develop in groups.

It should be especially noted that media development has never left the support of new technologies, and the role of new technologies cannot be ignored for media integration. The media should vigorously introduce Internet technology and network power Husain [8] and use satellite computer technology to realize digital data dissemination under the large platform of new technology, which can effectively integrate various resources and strengthen the interchangeability and interconnectivity of each medium. Such new media technology moves all media toward integration and realizes a true sense of convergence [9]. And with the rise of big data technology, the development of new media has been changed even more dramatically. The application of various big data technologies based on artificial intelligence or intelligent algorithms has led to a deeper change in the development of new media.

The development of new media technology integration should adhere to content construction as the fundamental, emphasizing the content to reflect the development advantages [7]. This is mainly because media integration is a systematic project. Rationalize and re-engineer the production process Scolari and Fraticelli [10] build organizational structure and a series of other work, all to integrate content production as the central link, so that media integration is really put into practice. To improve the content production capacity of media integration, mainstream media should change the traditional media content of a single performance paradigm, the organic integration of pictures, text, video, audio and other media, to achieve the true meaning of "product integration".

At present, with the deep development of media convergence, mobile communication technology represented by 5G has also improved by leaps and bounds in terms of network speed Baum, et al. [11] flexibility and security. The use of scenario-based and mobile features is more prevalent in the medium. At the same time, the media report to guide to adhere to the "innovation". Under the vision of media integration, the ecology of public opinion has undergone many changes. To improve the level of media guidance, mainstream media must adhere to innovation, comprehensively promote the concept, means, and other innovations, and improve the effectiveness of news and public opinion guidance and communication power [12].

With the further development and advancement of technology, technologies such as big data and cloud computing are widely used in different fields such as science and technology and social sciences. For example, traditional intelligence techniques BP neural networks are used in the prediction and research process in various fields. Similarly, the technology of big data can be applied to the development and evolution of new media. In this paper, several intelligent algorithms and coupled algorithms will be used from the perspective of big data technology to improve the accuracy of assessing the strategic performance of new media and to provide suggestions on the methods of assessing the strategic performance of new media by comparing the predictive performance of several intelligent algorithms.

2. The New Trend of New Media Talent Training - Data Thinking

With the development of new media, big data and intelligent media, there are more and more data in new media platforms and data has become the core resource in the Internet field [13]. Data is being used more and more extensively and deeply in the production, distribution, marketing, and operation of information content.

Data analysis ability is the characteristic of network and new media majors, but in the specific application practice, we should not only emphasize data analysis skills but also emphasize the cultivation of data thinking. In a narrow sense, data thinking focuses on data analysis capabilities and the thinking

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

reflected in them, such as data acquisition, data cleaning, data analysis, data presentation, data interpretation, etc. Figure 1 shows the proportion of traditional media applications of data analytics as the years change. As can be seen from Figure 1, data analytics entered the 20th century with a higher percentage of the areas where new media technologies were applied.

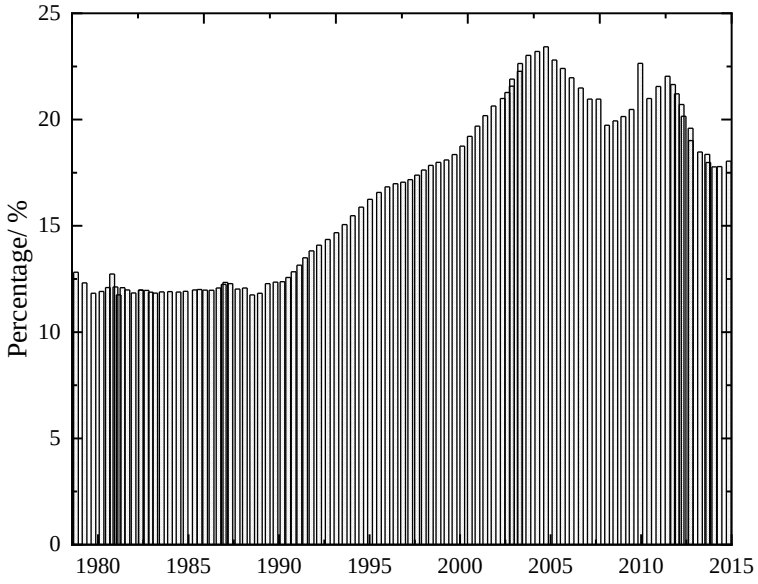

Figure 1.
Percentage of data thinking in the media industry.

One study found that our media industry places great emphasis on the data analysis skills of its practitioners [14].

In a broad sense, data thinking includes not only specific technologies and skills, but also deep data applications based on them, as well as data thinking reflected in practices such as product development, content production, and marketing planning. At the application level, data thinking in the new media industry is a mindset that uses quantifiable results as a guide to drive goal setting, with goals as an entry point and data results as a grip, and then implements project execution through data practices.

For example, a business-value-focused, data-analytics-driven approach can well guide the development of new media products [15]. In the specific implementation, it is necessary to use modules such as user story map, user experience map, double diamond model, and empathy for data processing and thinking, thus designing new media products that are both good and popular. Figure 2 shows the proportion of data technology (data thinking) used in the traditional media industry and the new media industry. What can be found in the graph is that the proportion of data technology application is higher in new media than in traditional media after 2005, which indicates that the new media strategy started to rise after 2005, thanks to the wide spread of Internet technology [16].

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

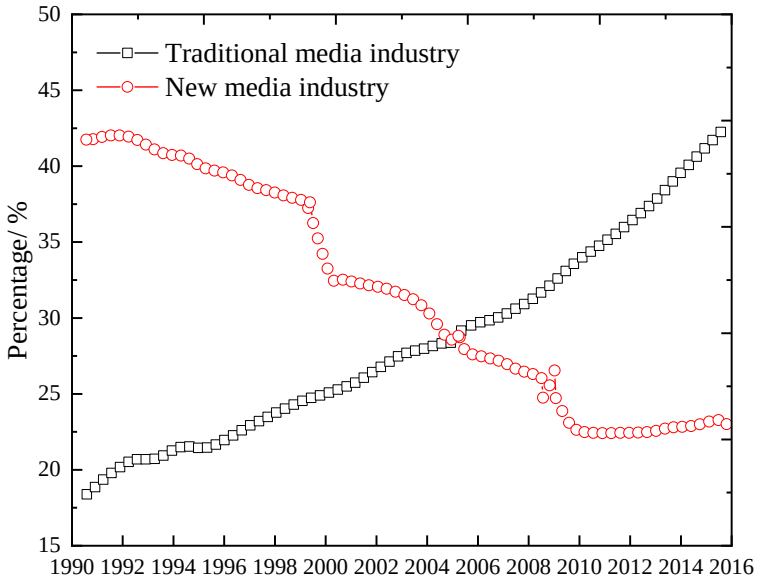

Figure 2.
Proportion of data technology applications in traditional and new media.

Data thinking relies on data analysis practices and capabilities Marlina, et al. [17] but is not limited to data analysis. There are two main reasons for this: from the perspective of professional genes, the new online media does not have an absolute advantage in data analysis, but its more prominent feature is its ability to apply data-based thinking to specific communication practices. Without training in data thinking, the data advantages of the new online media cannot be applied and demonstrated in the job market when facing computer and other professions. Internet companies or new media departments have launched some data capture software, data analysis software, etc. The threshold of intervention of this software is low, and text reports or data analysis reports can be generated by directly inputting information. Some companies have a very fine division of departmental operations, and the technology department will directly output data analysis results. In these circumstances, technology itself is no longer an important focus for the training of new online media professionals [18, 19].

The ability of data analysis will affect the production and distribution of content works, platform operation strategies and methods, the execution and implementation of marketing programs, the acquisition, and monitoring of the effects of advertising practices, the direction of product development, etc.

Based on the relevant courses currently offered by academia and the industry's demand for new media talents, it is necessary to find the grasp of new media talents cultivation García-Gil, et al. [20] and Bhandari, et al. [21] specifically including the construction of knowledge modules and exploration of cultivation mode. It is particularly important to conduct output, creative practice activities based on data thinking. This needs to be grounded in the tradition of communication studies Chai and Kalyal [22] and landed on a grasp of communication content, laws, etc.

Data thinking is hierarchical and structured, as evidenced by data concepts, data practices, and data ideas [23]. As shown in Figure 4, there is an increasing shift from data concepts to data practices to data concepts, from book theoretical knowledge to industry practices, and from data analysis skills to data applications and practices. Corresponding to this, the ability to use basic data theoretical knowledge is becoming more and more demanding, and the ability to understand data is becoming more and more difficult to perceive.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

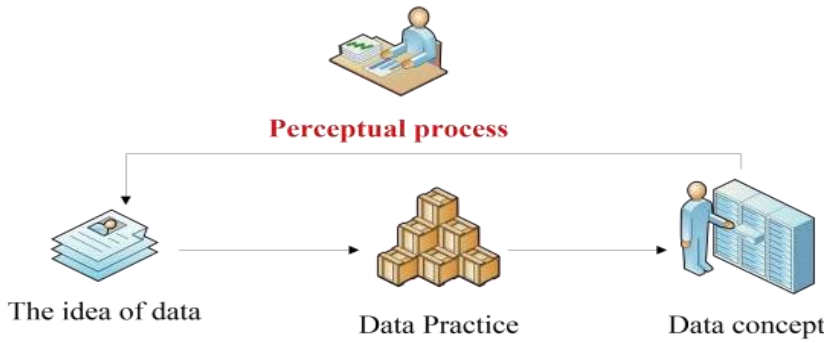

Figure 3.
Mind map of data application.

Data thinking is the foundation and data application is the superstructure [24, 25]. Data analysis is the stepping stone, and its energy is not limited to the course itself, but more importantly in the higher level application techniques [26]. We are committed to applying these fundamentals in a multidimensional, systematic and in-depth manner. With the widespread use of big data technology, the implementation of media strategies cannot be achieved without the addition of this new technology. Big data technology is a platform based on artificial intelligence or intelligent algorithms. Compared to the data thinking mentioned in this section, big data technology amounts to an evolutionary treatment of this data thinking, making this way of considering problems supported by new technologies that are more rational and accurate. Several typical techniques of big data will be introduced later to compare their effectiveness in application.

3. Multidimensional Support Vector Prediction

3.1. Multi-Dimensional Output Support Vector Regression

The output variables of traditional support vector regression (SVR) are one-dimensional variables, and this feature limits its application scenarios to some complex systems where a multiple-input-multiple-output mapping system is required. Therefore, the one-dimensional support vector machine is extended to make it applicable to multidimensional output systems, forming a multidimensional support vector machine for the evaluation and study of new media strategies.

Extending the one-dimensional insensitive loss function to a multidimensional space, the loss function is defined and the expression of the loss function is:

$$F(\theta_i)=\begin{cases}0, & \theta_i<\vartheta\\ (\theta_i-\vartheta)^2, & \theta_i\geq\vartheta\end{cases} \tag{1}$$

Where: $\theta_i=\|\boldsymbol{e}_i\|=\sqrt{\boldsymbol{e}_i^T\boldsymbol{e}_i}$; $e_i^T=y_i^T-\varphi^T(x_i)w-a^T$; $w=[\omega^1,\cdots,\omega^m]$; $\boldsymbol{a}=[a^1,\cdots,a^m]^T$. Where φ is the nonlinear mapping kernel function; $\boldsymbol{x}_i$ is the sample input row vector; $\boldsymbol{y}_i$ is the sample output row vector; $i=1,\cdots,n$, n is the number of samples, and m is the dimensionality of the output variable.

Based on the loss function shown in the above equation, The optimization objective function can be constructed with an expression:

$$F_o(\boldsymbol{w},a)=\frac{1}{2}\sum_{j=1}^{m}\left\|\boldsymbol{\omega}^j\right\|^2+\chi\sum_{i=1}^{n}F(\theta_i) \tag{2}$$

To solve the mathematical optimization problem of the multidimensional output support vector regression model, this paper introduces the iterative reweighted least squares (IRSL) to solve the problem.

In the optimization objective function of Eq. (2), the loss function is approximated by replacing it with a first-order Taylor expansion:

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

$$F_o'(\boldsymbol{w},\boldsymbol{a}) = \frac{1}{2}\sum_{j=1}^{m}\left\|\boldsymbol{\omega}^j\right\|^2 + \chi\left(\sum_{i=1}^{n}F\left(\theta_i^k\right) + \left.\frac{dF\left(\theta_i\right)}{d\theta_i}\right|_{\theta_i^k}\frac{\left(e_i^k\right)^T}{\theta_i^k}\left[e_i - e_i^k\right]\right) \tag{3}$$

Constructing a quadratic approximation of Eq. (3) instead, The approximate formula used can be expressed as the following relationship.

$$F_o''(w,\boldsymbol{a}) = \frac{1}{2}\sum_{j=1}^{m}\left\|\boldsymbol{\omega}^j\right\|^2 + \chi\left(\sum_{i=1}^{n}F\left(\theta_i^k\right) + \left.\frac{dF\left(\theta_i\right)}{d\theta_i}\right|_{u_i^k}\frac{\theta_i^2 - \left(\theta_i^k\right)^2}{2\theta_i^k}\right) = \frac{1}{2}\sum_{j=1}^{m}\left\|\boldsymbol{\omega}^j\right\|^2 + \frac{1}{2}\sum_{i=1}^{n}\zeta_i\theta_i^2 + \chi \tag{4}$$

The reason for using this approximation formula is that w and a are decoupled in this formula, the optimization solution does not need to be iterated, and the approximate solutions of w and a can be calculated by taking the partial derivatives of w and a equal to 0 directly. The optimization objective is solved to obtain w and a that minimize the overall loss of the sample set, and the multi-output support vector regression model is established. χ is a constant term that does not depend on w and a.

In equation (4), an engineering parameter can be expressed as follows:

$$\zeta_i = \frac{\chi}{\theta_i^k}\left.\frac{dF\left(\theta_i\right)}{d\theta_i}\right|_{\theta_i^k} = \begin{cases} 0, & \theta_i^k < \vartheta \\ \dfrac{2\chi\left(\theta_i^k - \vartheta\right)}{\theta_i^k}, & \theta_i^k \geq \vartheta \end{cases}; \tag{5}$$

The algorithm flow is as follows:

1) Initialize the settings $k=0$, $w^k=0$, $a^k=0$, and calculate θ_i^k and ζ_i;

2) The approximate optimization objective function is solved, and the computed results are noted as w^g and a^g. Meanwhile, we can define the direction of descent as follows:

$$\boldsymbol{S}^k = \begin{bmatrix} \boldsymbol{w}^g - \boldsymbol{w}^k \\ \left(\boldsymbol{a}^g - \boldsymbol{a}^k\right)^T \end{bmatrix} \tag{6}$$

3) Calculating the solution for the next iteration step, the iterative calculation formula can be expressed as:

$$\begin{bmatrix} \boldsymbol{w}^{k+1} \\ \left(\boldsymbol{a}^{k+1}\right)^T \end{bmatrix} = \begin{bmatrix} \boldsymbol{w}^k \\ \left(\boldsymbol{a}^k\right)^T \end{bmatrix} + \sigma^k\boldsymbol{S}^k \tag{7}$$

where: σ^k is the iteration step size.

3.2. Immune Selection Optimization Algorithm

The biological immune system is a complex adaptive system. The human immune system is capable of recognizing pathogens and responding to them, thus having some ability for learning, memory and pattern recognition. This approach is similar to an external stimulating antigen that stimulates the body's immune system to produce antibodies in response to it. That is, one input variable corresponds to a unique output function, and this approach allows the principles and mechanisms of its information processing to be described using computer algorithms into to solve scientific and engineering problems. Algorithmic immunity preserves several features of biological immune systems and introduces them into the solution of optimization problems.

A population suppression process is added to the immune algorithm to control the average concentration of the population and avoid premature convergence of the algorithm to a locally optimal solution. This increases the global optimization capability.

A typical multi-peak function is used to enhance the application of the immune algorithm. The multi-peak function can be expressed as follows:

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

$$M(x)=\sum_{i=1}^{n-1}\left(100\left(x_{i+1}-x_i^2\right)^2+\left(1-x_i\right)^2\right) \quad (8)$$

The global minimum point of the multi-peak function is obtained when all independent variables take the value of 1. The minimum value of the function is 0. The search interval of the independent variables is (-10,10), and the specific parameters of the algorithm are set in Figure 2.

The optimization results of 10 trials of the immune algorithm are shown in Figure 4. From Figure 4, it can be seen that the immune algorithm has good multi-dimensional multi-peak function seeking ability and can be applied to solve optimization problems of multi-dimensional support vector machine models.

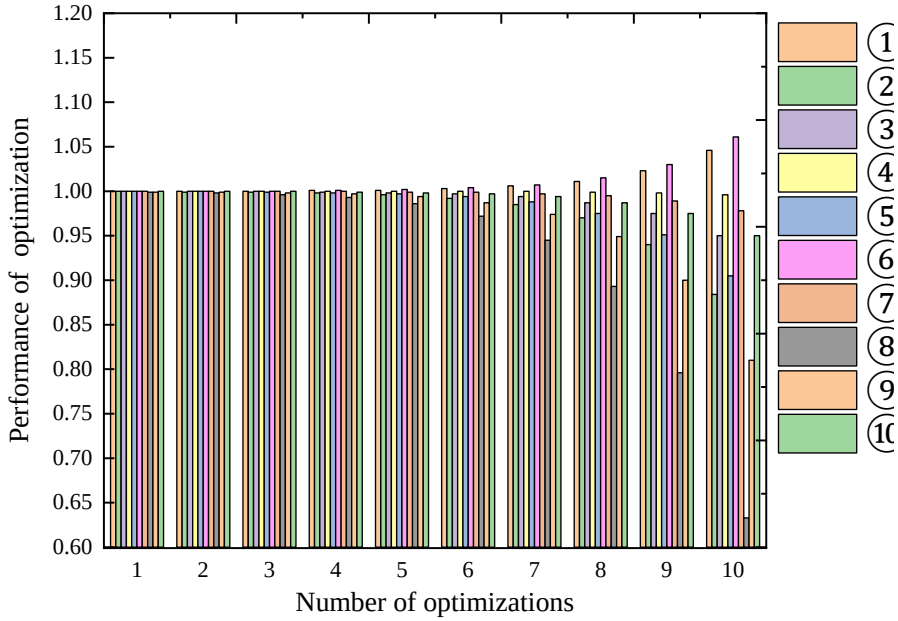

Figure 4.
Function optimization results.

3.3. Coupling Algorithm Based on Immune Algorithm-Multidimensional Support Vector Machine

In the process of building a multidimensional support vector machine prediction model, the values of the control parameters need to be specified artificially to control the parameter values to achieve the minimum sample training error and the best multidimensional support vector machine model generalization accuracy.

In the model training phase, the overall error function of the set of training samples is defined as the optimization objective, and the same insensitive loss function is used for the errors of individual samples. The training samples are divided into learning samples and test samples, and the expression of the normalized objective function is:

$$\left(\chi^*,\vartheta^*,\tau^*\right)=\underset{C,\varepsilon,\sigma}{\operatorname{argmin}} F_{\mathrm{A}}(\chi,\vartheta,\tau) \quad (9)$$

$$F_{\mathrm{A}}(\chi,\vartheta,\tau)=\sum_{l=1}^{k}\sum_{i=1}^{k_l}F\left(\theta_i\right) \quad (10)$$

Where: $F_A(\chi,\vartheta,\tau)$ denotes the overall training loss function; k denotes the number of aliquots of the sample; k_l denotes the number of each copy after k aliquots of training samples; the superscript asterisks indicate the optimal parameters obtained.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

After the multidimensional support vector machine model is trained, i.e., the optimal multidimensional support vector machine model parameters are optimized by the immune algorithm or particle swarm algorithm, the whole computational process of the coupling algorithm is completed. Figure 6 shows the computation process of immune algorithm-multidimensional support vector machine.

4. Prediction System Based on BP Neural Network

The prediction model based on BP neural network can be expressed as the relation of Elman network. The BP neural network can be expressed as follows for the input layer.

$$x_i^0 = x_i(k) \tag{11}$$

The BP neural network can be expressed as follows for the hidden layer.

$$\begin{aligned} h_i^1 &= \sum_{j=1} w_{ij}^0 x_j^0(k) + \sum_{j=1} w_{ij}^2 \alpha_j^0(k) \\ x_i^1 &= f\left(h_i^1(k)\right) \end{aligned} \tag{12}$$

The BP neural network can be expressed as follows for the output layer.

$$h_i^3(k) = \sum_{j=1} w_{ij}^1 x_j^1(k) \tag{13}$$

The key to the nonlinear ability and learning ability of neural network lies in the continuous modification of weights. There are two methods for recurrent network training, one is batch mode and the other is online mode. However, the Elman network uses the latter. $\psi(k)$ is the error function of network weight adjustment at time k .

$$\psi(k) = \frac{1}{2}\sum_{i=1}\left(\eta_i(k)\right)^2 \tag{14}$$

$$\eta_i(k) = \bar{\eta}_i(k) - \hat{\eta}_i(k) \tag{15}$$

5. Intelligent Algorithm for Particle Swarm Optimization

Particle swarm optimization algorithm is used to simulate various biological social behaviors such as biological reproduction and upgrading, and can be used to find the optimal solution to the problem. This artificial intelligence algorithm consists of a finite number of particles that are unrelated to each other. These particles automatically search for a single best position (P) and a global best position (G) according to the optimal problem solution, according to the optimization criteria found in nature. Each iteration the researchers got during the computation was re-updated based on the particle's position and velocity. The calculation steps for updating the relative motion trajectory of each particle can be expressed as follows.

$$\begin{cases} \mu_i = \varpi \times \mu_i + \alpha_1\beta_1(P - x_i) + \alpha_2\beta_2(G - x_i) \\ x_i = x_i + \mu_i \end{cases} \tag{16}$$

Where μ_i and x_i denote the velocity and position of the i-th particle, respectively, ϖ is the inertia weight to reflect the real-time effect of the previous example velocity on the current particle velocity; α_1 and α_2 are the learning factors, and β_1 and β_2 are uniform random numbers between $[0,1]$. Eq. (16) is the expression form of the standard swarm algorithm.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

6. Example Verification and Data Analysis

This paper uses the relevant case data of new media copyrights of sports events to conduct a case analysis and research on big data algorithms. As a brand-new concept, the academic research on new media copyright of sports events also started in recent years. This type of research mainly focuses on concept connotation, development and operation, legal guarantee, and dilemma review and optimization strategies.

Based on the extraction principles of scientific, comprehensiveness, feasibility and rationality, and based on the theoretical basis of "stakeholders", an index system of influencing factors of new media copyright development of sports events is constructed.

This study divides the stakeholders of new media copyright development of sports events into two categories: 1) Core stakeholders are the main stakeholders who directly influence the development of new media copyrights of sports events, and have close interests in the development of new media copyrights, such as copyright operating companies etc.; 2) Dormant stakeholders are closely related to the development of new media copyrights for sports events, and have a greater impact on copyright development and operation, such as government regulatory organizations, peer competitors, etc.

Under the guidance of the above theories and principles, the selection of influencing factor indicators follows the principles of calculation and classification. This article mainly discusses the following 10 variables: new sports media talents, quantity and quality of copyright of sports events, corporate operating funds, leadership of corporate managers, innovative ability of event content and derivative production, market share of peers, and related support policies The formulation and implementation, user payment habits, user brand loyalty and marketing strategies and means.

The direct influence matrix among the factors influencing the development of new media rights for sports events can be drawn in Figure 5.

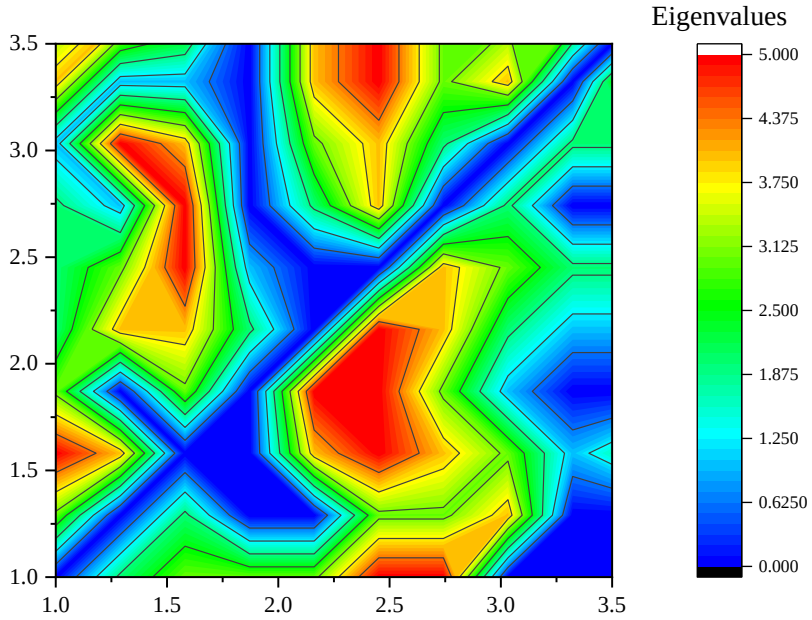

Figure 5.
Convergence comparison of algorithms.

The degree of influence, the degree of being influenced, the degree of centrality and the degree of cause are the criteria for measuring the degree of influence of the four elements in the system. They can be calculated from the combined influence matrix. We can add the elements of each row in the comprehensive influence matrix to get the influence degree. The sum of the influence degree and the

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

influenced degree is the centrality degree. As we all know, the greater the centrality, the stronger the effect on the research target. The difference between the influence degree and the influenced degree is the cause degree. This concept is called causal factor. As we all know, the smaller the causality degree, the easier the influencing factor is to be influenced by other influencing factors. This concept is called an outcome factor. Figure 6 shows the metric values of the influence degree, influenced degree, centrality degree and cause degree of 10 influencing factors.

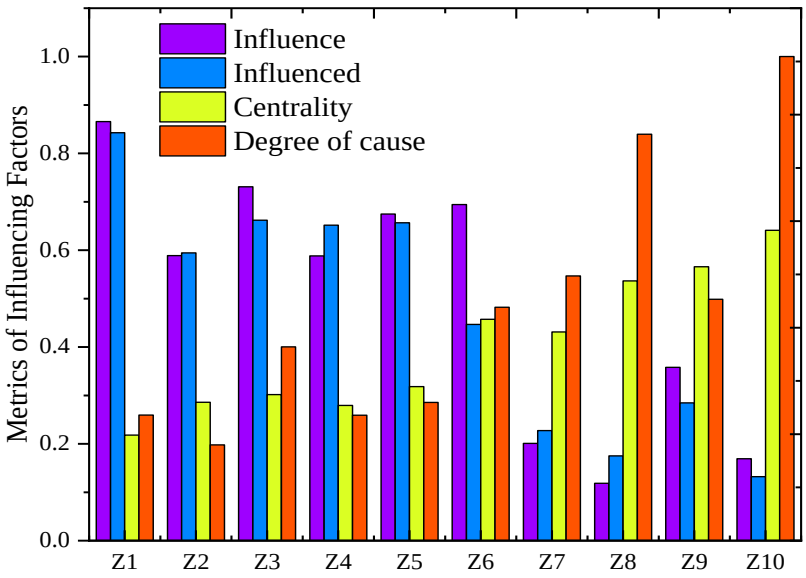

Figure 6.
Influencing factors of new media copyright development in sports events.

As shown in Figure 8, the cause degree can reflect the categories of influencing factors. The larger the causality degree of the influencing factor, the more the factor is the causal index in the influencing factor system. The smaller the causal degree of the influencing factor, the more the factor is the result index in the influencing factor system.

When the number of big data calculation steps is 40, 80, 120, 160 and 200 respectively, we compare the calculation completion time of the three algorithms of immune algorithm optimization multi-dimensional support vector machine, BP neural network and particle swarm optimization. The specific test results are shown in Figure 7.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

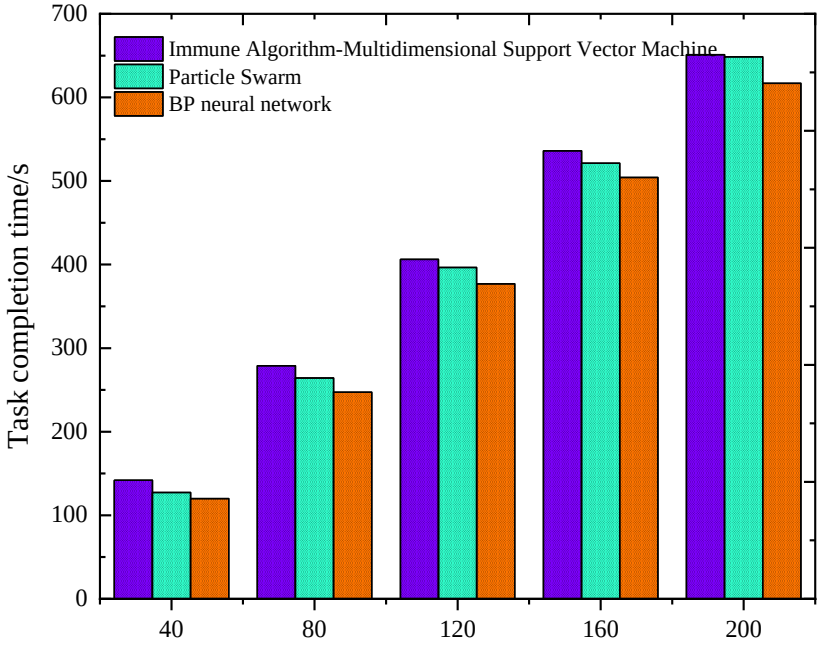

Figure 7.
Comparison of task completion time.

As can be seen in Figure 7, the support vector machine optimized by the immune algorithm requires less computation time and better optimization compared to the particle swarm algorithm and BP neural network. With the gradual increase in the number of tasks, the time difference between the three intelligent algorithms task completion increases.

The four metric criteria in Figure 8 are investigated for prediction through the three intelligent algorithms mentioned above: multidimensional support vector machine optimized by immune algorithm, particle swarm optimization and simple BP neural network. We can calculate the monitoring values by using the MATLAB computing platform. It is well known that the square of the correlation coefficient (R^2) and the sum of squared residuals (SSE) are two typical predictors. The next step is proposed by comparing the squared correlation coefficient (R^2) with the root mean square difference (RMSE) of the three algorithms. It is well known that the larger the square of the correlation coefficient (R^2) and the smaller the sum of squared residuals (SSE), the better the fit. The predictive metrics obtained by the three big data algorithms are plotted in Figure 8.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

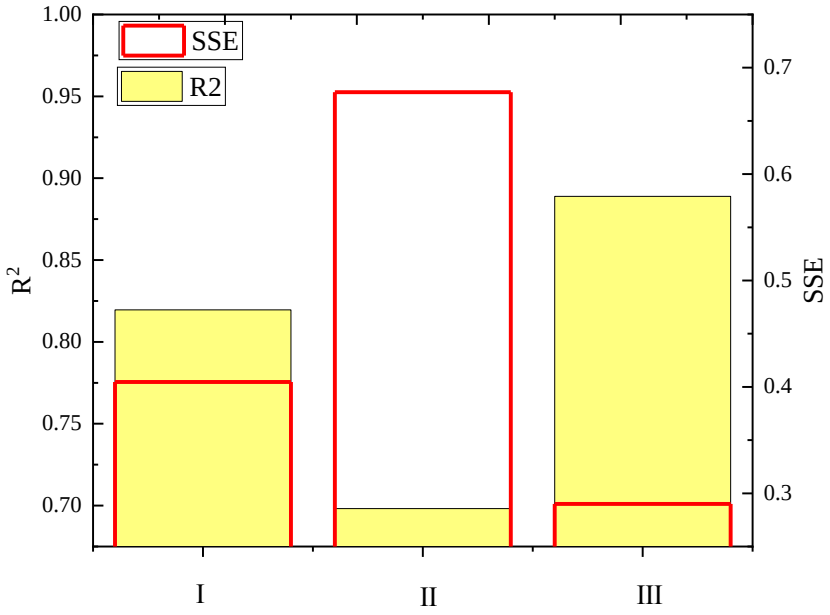

Figure 8.
Comparison of the prediction performance of the three intelligent algorithms.

As shown in Figure 8, I represent the particle swarm optimization algorithm, II represents the multidimensional support vector machine optimized by the immune algorithm, and III represents the BP neural network. The support vector machine optimized by the immune algorithm obtained the largest square of the correlation coefficient and the smallest sum of squared residuals compared to the three algorithms. This indicates that the immune algorithm-optimized support vector machine has the best computational effect and can be used as an application of big data technology for the evaluation study of new media strategy performance. At the same time, this algorithm can also provide some reference for the development of response strategies in the new media era.

7. Conclusion

It is predictable that in the current social development context, the media must recognize the current mainstream trends of social development if they want to improve their own development and maintain sustainable development in the modern society. At the same time, it should combine with its own development plan to change the information content to show the way of communication through the strong support of new technology. This requires us to strengthen the concept of innovation, improve its own system, and adopt scientific management operation. As long as this can guarantee the development of the media, it can also effectively ensure the strategic transformation of traditional media.

The article is studied with the case of new media for sports events. The results show that a quantitative study of the importance of the indicators influencing the development of new media rights for sports events is essential. The results of the study conclude that marketing strategy and means, platform operating funds, user brand loyalty, and corporate strategy and positioning are the most important influencing factors. The quantitative results can provide a reference for the evaluation and assessment of new media rights development for sports events.

Three big data related methods are introduced for the prediction study. The prediction effects show that for the research cases introduced in this paper, the prediction effects of the three intelligent algorithms are ranked from good to bad: immune algorithm optimized support vector machine, particle swarm algorithm and BP neural network. It is proved that big data technology can be effectively applied

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651

to the study of new media strategy performance evaluation. At the same time, this algorithm can also provide some reference for the development of response strategies in the new media era.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Copyright:

References

[1] M. Menke and C. Schwarzenegger, "On the relativity of old and new media: A lifeworld perspective," *Convergence*, vol. 25, no. 4, pp. 657-672, 2019. https://doi.org/10.1177/1354856519834480

[2] S. Mehta, "Precarity and new media: Through the lens of Indian creators," *International Journal of Communication*, vol. 13, pp. 5548-5567, 2019.

[3] T. Ross, "Contested language use in ethnic media: A case study of New Zealand's Pacific media," *Journal of Multilingual and Multicultural Development*, vol. 40, no. 10, pp. 907-919, 2019.

[4] R. Ritonga and I. Syahputra, "Citizen journalism and public participation in the era of new media in Indonesia: From street to tweet," *Media and Communication*, vol. 7, no. 3, pp. 79-90, 2019. https://doi.org/10.17645/mac.v7i3.2094

[5] P. Unwin, "An extremely useful invention': Edison's electric pen and the unravelling of old and new media," *Convergence*, vol. 25, no. 4, pp. 607-626, 2019.

[6] I. Siddique, "Digital satellite technology: Innovations and applications in the modern era," *European Journal of Advances in Engineering and Technology*, vol. 11, no. 6, pp. 39-46, 2024. https://doi.org/10.5281/zenodo.12748154

[7] S. Wu, "Research on traditional media integration and innovation strategies in the new media era," *Journal of Social Science Humanities and Literature*, vol. 7, no. 3, pp. 17-27, 2024. https://doi.org/10.53469/jsshl.2024.07(03).04

[8] Z. Husain, "Enhancing image segmentation using generalized convex fuzzy sets and statistical consistency," *Inf. Dyn. Appl*, vol. 4, no. 1, pp. 53-65, 2025.

[9] D. A. M. Ahmedien, "A drop of light: an interactive new media art investigation of human-technology symbiosis," *Humanities and Social Sciences Communications*, vol. 11, no. 1, pp. 1-20, 2024.

[10] C. A. Scolari and D. Fraticelli, "The case of the top Spanish YouTubers: Emerging media subjects and discourse practices in the new media ecology," *Convergence*, vol. 25, no. 3, pp. 496-515, 2019.

[11] D. Baum, M. Spann, J. Füller, and C. Thürridl, "The impact of social media campaigns on the success of new product introductions," *Journal of Retailing and Consumer Services*, vol. 50, pp. 289-297, 2019.

[12] C.-y. Guan, J.-m. Tang, and M. Wang, "The family politics of new media domestication: an ethnographic study of mobile phones' influences on rural adolescents' socialization in a central Chinese town," *Asian Journal of Communication*, vol. 30, no. 1, pp. 1-19, 2020.

[13] H. Gu, "Data, big tech, and the new concept of sovereignty," *Journal of Chinese Political Science*, vol. 29, no. 4, pp. 591-612, 2024.

[14] H. Zhang, L. Ke, and D. Ding, "The effect of chinese population aging on income inequality: Based on a micro-macro multiregional dynamic cge modelling analysis," *Emerging Markets Finance and Trade*, vol. 57, no. 5, pp. 1399-1419, 2021.

[15] A. Guo, X. Ding, F. Zhong, Q. Cheng, and C. Huang, "Predicting the future Chinese population using shared socioeconomic pathways, the sixth national population census, and a PDE model," *Sustainability*, vol. 11, no. 13, p. 3686, 2019.

[16] J. Amankwah-Amoah and S. Adomako, "Big data analytics and business failures in data-Rich environments: An organizing framework," *Computers in Industry*, vol. 105, pp. 204-212, 2019. https://doi.org/10.1016/j.compind.2018.12.015

[17] A. Marlina, D. Fazriansyah, W. Bimo, H. Sinaga, and H. Maulana, "Ritzkal,"A comprehensive guide to bibliometric analysis for advancing research in digital business,"" *J. Intell Manag. Decis*, vol. 3, no. 3, pp. 175-189, 2024.

[18] C. C. Ekin, K. Cagiltay, and N. Karasu, "Effectiveness of smart toy applications in teaching children with intellectual disability," *Journal of systems Architecture*, vol. 89, pp. 41-48, 2018.

[19] N. Helberger, "FutureNewsCorp, or how the AI Act changed the future of news," *Computer Law & Security Review*, vol. 52, p. 105915, 2024.

[20] D. García-Gil, F. Luque-Sánchez, J. Luengo, S. García, and F. Herrera, "From big to smart data: Iterative ensemble filter for noise filtering in big data classification," *International Journal of Intelligent Systems*, vol. 34, no. 12, pp. 3260-3274, 2019.
[21] M. Bhandari, G. Tiwari, and M. Dhakal, "Enhancing transparency and accountability in sustainable finance through blockchain technology: A systematic review of the literature," *Journal of Intelligent Management Decision*, vol. 4, pp. 23-43, 2025.
[22] X. Chai and H. Kalyal, "Cell phone use and happiness among Chinese older adults: does rural/urban residence status matter?," *Research on aging*, vol. 41, no. 1, pp. 85-109, 2019.
[23] R. Gould, "Toward data-scientific thinking," *Teaching Statistics*, vol. 43, pp. S11-S22, 2021.
[24] J. Sheng, J. Amankwah-Amoah, and X. Wang, "Technology in the 21st century: New challenges and opportunities," *Technological Forecasting and Social Change*, vol. 143, pp. 321-335, 2019.
[25] A. J. Park, J. M. Ko, and R. A. Swerlick, "Crowdsourcing dermatology: DataDerm, big data analytics, and machine learning technology," *Journal of the American Academy of Dermatology*, vol. 78, no. 3, pp. 643-644, 2018.
[26] D. J. Kim, J. Hebeler, V. Yoon, and F. Davis, "Exploring determinants of semantic web technology adoption from IT professionals' perspective: Industry competition, organization innovativeness, and data management capability," *Computers in Human Behavior*, vol. 86, pp. 18-33, 2018.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 2768-2781, 2025
DOI: 10.55214/25768484.v9i4.6651