Innovative Application and Development Trend of Algorithm Platform in Textile Design

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Abstract: In view of the limitations of traditional image recognition algorithms in the innovative application and development trend of textile design, an innovative application and development trend scheme in the design based on the algorithm platform is proposed. Firstly, the influencing factors is accurately located through the comprehensive use of theory, and the indicators is reasonably divided to reduce interference, and the algorithm platform is used to construct innovative applications and development trends in the design. Experimental results show that under certain evaluation criteria, the proposed scheme is superior to the traditional image recognition algorithm in terms of the accuracy of innovative application and development trend in the design, and the processing time of influencing factors, which has obvious advantages. The innovative application and development trend in design play an extremely important role in textile design, which can accurately predict and optimize the growth characteristics and product generation of textile design. However, traditional image recognition algorithms have certain limitations in solving simulation problems in innovative applications, especially when dealing with complex problems. In this paper, this paper proposes innovative applications and development trends in the design of algorithm platforms to better solve this problem. The scheme accurately locates the influencing factors by comprehensively using the theory, so as to determine the division of indicators, and uses the algorithm platform to construct the scheme. Experimental results show that under certain evaluation criteria, the accuracy and speed of the scheme is significantly improved for different problems, and it has better performance. Therefore, the use of simulation scheme based on algorithm platform in the innovative application and development trend of textile design can better solve the limitations of traditional image recognition algorithms and improve the accuracy and efficiency of simulation.

1 INTRODUCTION

The importance of innovative applications and development trends in design in textile design is self-evident (Wang, and Zhang, 2023). Through simulation, various parameters and changes in this process can be predicted and understood, providing (Li, 2023) guidance and support for actual production. However, there is certain deficiencies in the accuracy of the innovative application (Chen, Huang, et al. 2023) and development trend scheme in the traditional design, which limits its effect in practical (Zhang, 2023) application. In order to solve the problem of accuracy of innovative applications (Li et al., 2023) and development trends in traditional design, researchers have introduced algorithm platforms into the analysis of innovative applications (Wu, 2023) and development trends in design in recent years. The algorithm platform is a computational (Shao, 2023) method based on group behavior, which simulates the interaction and cooperation between individuals (Yao, 2023) to achieve the goal of global optimization. The algorithm has the characteristics of decentralization (Liu, 2023), immutability and smart contract, which can effectively solve the accuracy problems existing in traditional schemes. The optimization model (Wang, and Jiang, 2023) of innovative application and development trend in the design based on the algorithm platform further improves the accuracy and reliability of the simulation (Hang, 2023) by optimizing the parameters and algorithms in the process of innovative application (Yang, 2023) and development trend in the design. The model adjusts and optimizes the various parameters in this process (Zhang, 2023) to achieve the best innovative application results. At the same time, the model is able to cope with complex environments and

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interference factors, providing more realistic and reliable simulation results. Through a large number of experiments and data analysis, the researchers evaluated the effectiveness of the optimization model for innovative applications and development trends in the design of algorithm platforms. The results show that compared with the innovative application and development trend scheme in traditional design, the model has significant advantages in many aspects.

2 RELATED CONCEPTS

2.1 Algorithm Platform Processing Method

Each core of the algorithm platform is set for different needs, so as to improve the computational performance or real-time performance of the application. The intrinsic relationship between the variables is constructed into a "model for dealing with the innovative application and development trend of sharing-creativity-design". The algorithm platform has obvious advantages, which can carry out efficient integration of archives and has the advantage of sustainability. The algorithm platform analyzes the innovative application and development trend in the design of unstructured data, but it must meet the following assumptions.

Hypothesis A: Pit is the development result of innovative applications and development trends in design, and the time is at time t, and the set of innovative applications and development trends in design (Det) is constructed. Among them, any data x belongs to Pi, and the performance result of innovative application and development trend in the design is$P_j(x)$ as shown in equation (1).

$$P_j(x)\mathbb{S}\frac{\delta y}{\delta x} = \lambda\Gamma\frac{\Delta y}{\Delta x}\sum_{i,t=1}^{n} x^j{}_{it} \tag{1}$$

where belongs is$k \in (1, \cdots + \infty)$ to the mapping result. In order to improve the calculation accuracy of innovative applications is$\Re(k)$ and development trends in the design, the immunodeficient is$C(x, \beta)$ of x-sum isζ integrated. In equation (1), if the calculation accuracy is$x_{it} = \theta(\rho\, tan\, t)$ low, and if it is$x_{it} < \sum_{i,j,t=1}^{n} x^j{}_{it}$, the calculation accuracy meets the requirements.

2.2 Classification of Innovative Applications and Development Trends in Design

Hypothesis B: The results of the analysis is$P_n(x)$ of innovative applications and development trends in h' s design, and the results of mobile technology in innovative applications and development trends in different designs, is$\varphi(x \cdot k)$ shown in equation (2):

$$\int_h k \prod \quad \frac{\partial^2\Omega}{\partial u^2} \underset{<}{\longleftrightarrow} \varepsilon \overline{\sum_{j=1}^{h} f(P_j(x))}\, \Pi \qquad P_h(x) = \tag{2}$$

Among them, the comprehensive analysis function of different dimensions.

Assuming C: The comprehensive classification function i$f(x)$ s a function that satisfies is$w(x)$ the following conditions is$w(x) < \wp$, and , then the judgment of the results of distributed computing autonomous information technology is$w(x)'' < \frac{\Delta\wp^2}{2}$ shown in equation (3).

$$w(x) = \frac{\int_h k\, w(x)''}{2}\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\phi\mathbb{C} \tag{3}$$

Hypothesis D: The innovative application and development trend point in the arbitrary design is on the axis of autonomous information technology development, and the derivative of the innovative application and development trend point in the arbitrary design will represent the development direction of information technology, which isy_{it} calculated as shown in equation (4).

$$D(y, f(y)''|p) = \mathrm{KZ}\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{4}$$

Among them, it isαrepresents the development direction of distributed computing independent information technology.

From the above theorem, it can be seen that the nonlinear relationship between different economic data x can be calculated by using the innovative applications and development trends in the design, and the influence of i-dimension and t-time on the results of economic characteristics can be reduced. Therefore, the processing of innovative applications and development trends in design provides a good foundation and reduces the influence of data structures on the results of innovative applications and development trends in design. From theorem 3, it can be seen that the multi-dimensional judgment accuracy of independent information technology is$\alpha \cdot$

$lin(\frac{1}{x})$ as follows, indicating that the multi-dimensional judgment accuracy meets the requirements, and further reduces the influence of innovative applications and development trends in the design on the results.

2.3 Innovative Application and Development Trend Mining in Design

In this paper, the algorithm platform is selected for model construction, which is an innovative application and development trend classification technology in design, which has the advantages of fuzziness and adaptability, and can realize cyclic calculation and continuously revise the classification set. The algorithm platform can be constrained by using the IF mode to form constraint M, and its classification process is as follows:

$$\text{IF}: x_i < d_{ij}, \quad \text{and } M(x) \wedge C(x_i, x_{i-1}), \tag{5}$$

$$\text{then } y \wedge \sum_{i=1}^{n} y_i \vee \frac{1}{2} \sum_{i=1}^{n} M(x_i) \prod \varepsilon \mathbb{C} \tag{6}$$

Among them, it is$\lambda(x_i)$ the adjustment function of autonomous information technology, the set of adjustment results of distributed is computing information technology, the constraints isd_{ij}, and the results of distributed computing autonomous information technology. The algorithm platform prepossess the distributed computing information technology, and the algorithm platform is$M(x)$ used in the processing process, and the accurate results is$y$ finally obtained. Therefore, the output results can be deduced by the algorithm platform, and the results of innovative applications and development trends in comprehensive design can be obtained.

Hypothesis E: The innovative application and development trend in any design isx_i that the relationship between the input variable and the output variable isx_i analyzed by constraint M, is $y_i$shown in equation (7).

$$\alpha \cdot g_{ij} \mathfrak{M} \prod \notin = \sum_{i,j=1}^{n} x \cdot \{\frac{(x_i \wedge c_{ij})}{b_{ij}}\} \tag{7}$$

Among them, the results of innovative applications and development trends in different designs;isc_{ij} a prepossessing collection for performance.

According to the calculation of the innovative application and development trend in the above design, the continuous operator of the innovative application and development trend in the design isb_{ij} obtained, and the calculation result isg_{ij} shown in equation (8).

$$g_{ij} \frac{n!}{r!\,(n-r)!} = \mathbb{Z}\psi \sum_{i,j,k=1}^{n} {g_{ij}}^{k} \wedge (x^2) \tag{8}$$

Among them, it isδ the performance coefficient of innovative application and development trend in design, and k is the class. According to the results of the innovative application and development trend in the design, the output value of the innovative application and development trend in the design can be obtained, as shown in equation (9).

$$y\sqrt{a^2 + b^2} = \sum_{i,j,k=1}^{n} {g_{ij}}^{k}(x) \Rightarrow f(P_j(x) \tag{9}$$

The algorithm platform can shorten the processing time of innovative applications and development trends in the design, and increase the amount of prepossessing performance. According to the initial performance amount, the innovative application and development trend in multi-dimensional design is carried out (Zhang Tiantian 2023), and the results of innovative application and development trend in continuous design is formed.

3 JUDGMENT OF INNOVATIVE APPLICATION AND DEVELOPMENT TREND MODEL IN DESIGN

3.1 Initialization of Innovative Applications and Development Trends in Design

The innovative application and development trend model in the design can improve the independent information technology capability of distributed computing and shorten the data structure optimization time. It is reflected in the comprehensive analysis of the initial data volume and multi-dimensional data volume, and uses the innovative application and development trend alarm conditions in the design to realize the comprehensive judgment of the innovative application and development trend in the design, and output the optimal results.

(1) Innovative applications and development trends in the independent design of distributed computing

In order to improve the computational accuracy of the data, the researchers changed the structure of distributed computing autonomous information technology data by expanding the amount of initial data and increasing the variety of data. The original data structure was unstructured and discretely distributed, but now it is more diverse. Under the influence of expanding the amount of data and increasing the variety of data, the amount of performance data no longer conforms to the normal distribution, but the problem of calculation redundancy is solved, and the accuracy of comprehensive calculation is improved. The specific results can be referred to Figure 1.

Figure 1: Innovative applications and development trends in the design of different processing aspects.

According to the comparison of the results shown in Figure 1, it can be observed that the image recognition algorithm and the algorithm platform process the initial big data. Under the processing of image recognition algorithms, the initial data volume is relatively messy and non-directional. The amount of data processed by the algorithm platform is concentrated and directional. Based on theorems 1 and 2 of the algorithmic platform, the researchers concluded that the results of the algorithmic platform is independent of the spatial dimension, and that the algorithm can more accurately handle the tasks of innovative applications and development trends in the design. In addition, when the algorithm platform processes the initial amount of data, it can maintain a consistent data distribution effect every time a point is fetched, and the stability of the data set is high. Therefore, in order to handle the initial amount of data, it is a reasonable choice to choose an algorithm platform.

(2) Comprehensive judgment strategy of distributed computing information technology. In order to realize the distributed collaboration and comprehensive judgment of multi-dimensional information technology, the algorithm adopts a heterogeneous strategy and adjusts the corresponding parameters to process performance data of different dimensions. In the model, the big data is divided into five multidimensional sub spaces, each of which represents a dimension of the solution space. In the iterative process, the innovative applications in these five multi-dimensional designs evolve at the same time as the development trend information. After the iterative calculation is completed, the adaptation values of each dimension is compared, and the relationship between the position of the information of the innovative application and the development trend in each sub-multi-dimensional design and the innovative application and the development trend results in the comprehensive design is recorded. Then, the most concise way is used to gradually learn the innovative application and development trend information in each sub-multi-dimensional design and approach the optimal position of the comprehensive design results, so as to improve the speed and accuracy of the calculation of innovative application and development trend in design. In this way, the algorithm can use multi-dimensional information synergy to complete the comprehensive judgment process more effectively.

3.2 Innovative Application and Development Trend Judgment Technology in the Design of Algorithm Platform

The basic idea of the algorithm platform is to make a comprehensive judgment of innovative application and development trend information in multi-time and multi-dimensional design, and adjust and optimize the innovative application and development trend standards in the initial design of big data, and the alarm conditions of innovative application and development trend in the design to obtain the optimal solution and reduce the independent information technology rate of distributed computing, as shown in Fig. 2.

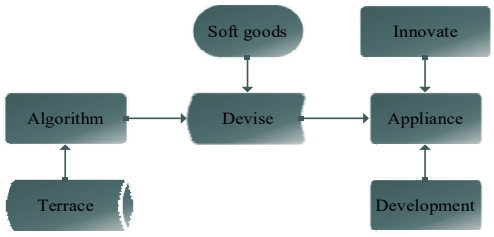

Figure 2: Algorithm Platform and Big Data Calculation Flow Diagram.

Here is the steps on innovative applications and trends in distributed computing design:

1 Determine the design information and data quantity structure: According to the data characteristics and the need to solve the problem, determine the data structure required for innovative applications and development trends in the design. The initial weight of the whole data and the innovative application and development trend alarm conditions in the design is taken as a whole and mapped to the big data, and the innovative application and development trend information in the design of each big data is taken as the product of the weight and the alarm condition. According to the actual application, the innovative application and development trend information in the big data design to determine the development trend of this development trend is D = 433.

2 Data initialization: Unstructured initialization of relevant parameters of big data.

3 Generate fitness function: Generate the initial amount of data using the algorithm platform theory and map it to big data. The accuracy of each big data is calculated and the absolute value of its sum of squiss is used as a function of fitness.

4 Determine the optimal position: Determine the optimal location of innovative applications and development trends in big data design and the optimal position of each sub field. The initial big data was divided into five sub-data quantities, the fitness ratio was calculated, and the comprehensive position and the optimal position of each sub-data volume were recorded.

5 Iterate the optimal position and velocity: Among the 5 evolution of the amount of seed data, choose one to evolve, and alliterative update the optimal position and velocity according to equations (7)~(9).

6 Iterative process: If the number of iterations is less than the maximum number of iterations, repeat steps 2~6, otherwise the iteration will be stopped, and the results of the innovative application and development trend alarm conditions, weights, and best positions in the design will be returned.

4 PRACTICAL CASE ANALYSIS

4.1 Performance Judgment of the Model

The algorithm platform was tested with single-index performance, multi-indicator performance, multi-dimensional indicators and other indicators to verify the performance of the model proposed in this paper.

Single-metric performance is the only minimum function of the test model synthesis, and the formula is as follows:

$$A(x) = \sum_{i=1}^{n} [x_i^2] \quad \frac{\partial^2 \Omega}{\partial v^2} \iint \gamma \tag{10}$$

Multi-index performance is a cosine modulation transfer function that frequently generates a single minimum value to verify the practicability of the model solution, and the formula is as follows:

$$B(x) = \frac{dy}{dx} \lim_{x \to \infty} \sum_{i=1}^{n} cos\, \alpha\, e^{x_i^2} \qquad \frac{dy}{dx} \mathbb{C} \tag{11}$$

Multi-dimensional indicator is an algorithm used to evaluate multi-dimensional data, and the judgment speed of synthesis is calculated by gradient optimization of multi-dimensional data. The specific formula is as follows:

Indicator = Σ (weight i * value i)

where the weight i represents the weight of the ith dimension, and the value i represents the numerical value of the ith dimension. By multiplying and adding the weights of all dimensions and the corresponding values, the final metric value is obtained. This metric value can be used to evaluate the performance of the data across multiple dimensions, and the weights can be adjusted to adjust the contribution of each dimension to the final result.

$$C(x) = \Upsilon - \alpha e^{\sqrt{\frac{1}{n} \sum_{i=1}^{n} x_i^2}} \tag{12}$$

where n is the total number of indicators for which data isx_i calculated, and the number of arbitrary indicators is used.

The calculation was simplified and a test experiment with 1200 innovative application systems was designed. In this experiment, we performed 30 iterations and set the maximum length to 24 months. We tested each of the above three functions and averaged the results 10 times. The specific calculation results is shown in Table 1.

Table 1: Detection results of different test functions

Test metrics	Test the function	Equation parameter	Standard Error	Wald chi-squid	95% Confidence interval
Single-metric performance	Algorithmic platform	0.3488	2.3331	1.4710	2.6079~0.1640
	Image recognition algorithms	1.5890	0.2832	1.9927	
Multi-metric performance	Algorithmic platform	0.3686	0.1457	3.0717	0.5460~1.2811
	Image recognition algorithms	1.4262	2.1513	1.9777	
Multi-dimensional metrics	Algorithmic platform	1.1866	2.6480	0.9582	3.5760~0.2947
	Image recognition algorithms	1.4513	3.7818	0.7362	

The convergence plots for each data in Table 1 is shown in Figure 3.

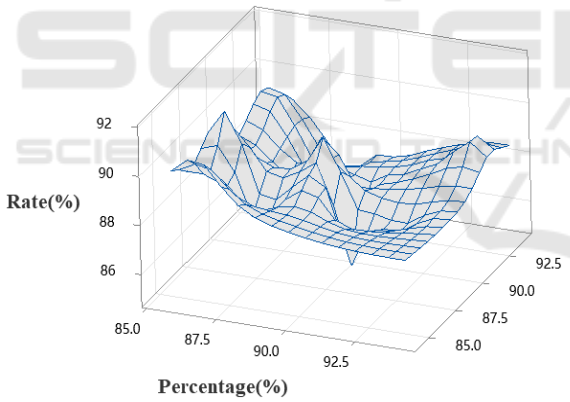

Figure 3: Comparative study of the research scheme of the algorithm.

According to the data comparison in Table 1, the algorithm platform proposed in this paper is closer to the results of innovative applications and development trends in comprehensive design, compared with image recognition algorithms. In terms of standard deviation, mean, value range, etc., the algorithm platform performs better. As can be seen from the surface changes in Figure 3, the algorithm platform performs better in terms of stability and judgment speed. Therefore, the algorithm platform is better in terms of judgment speed, performance level judgment and summation stability.

4.2 Innovative Applications and Development Trends in Design

The judgment data set of innovative applications and development trends in design includes innovative applications and development trends in digital design, innovative applications and development trends in bionic design, innovative applications and development trends in natural design, innovative applications and development trends in psychological design, and innovative applications and development trends in expected design [22]. After the preliminary prepossessing of the data, 43 rows of structured data and 32 rows of semi-structured data were obtained. In order to facilitate information efficiency, data in different fields is selected, namely: financial field, public service field, information security field, and Internet of Things field, and the data processing results is shown in Table 2.

Table 2: Classification and proportion of innovative applications and development trends in design.

Different types	Mean	SD
Wearable technology	43.60	0.98
Smart textiles	44.12	0.90
3D printing technology	45.34	0.85
Smart manufacturing	43.79	1.24
Test Items	Test value	p-value
-2Ln LR(L^2)	15.52	0.34
Pearson chi-squid	12.61	0.55
Scaled Deviance	15.52	0.34
Degrees of freedom=	14	

4.3 Test Results

In order to verify the algorithm platform proposed in this paper, the results is compared with image recognition algorithms and big data, and the results is shown in Figure 4.

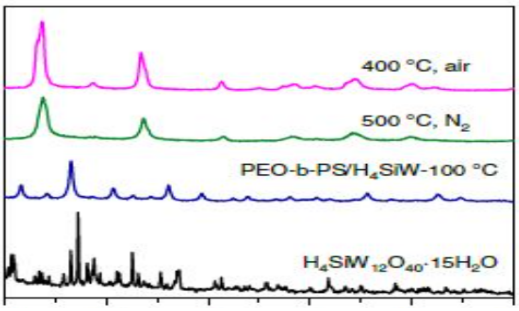

Figure 4: Test results for different algorithms.

According to the data in Figure 4, the algorithm platform surpasses image recognition algorithms and big data in terms of accuracy, and the error rate is

relatively low. This shows that the calculation results of the algorithm platform and big data is relatively stable, and the difference between the calculation results of the algorithm platform and big data is small. Table 3 shows the average results of the above two algorithms.

Table 3: Comparison of judgment accuracy at different levels

algorithm	Size of samples	Mean R	Se	99% Confidence interval	P-value	Accuracy
Algorithmic platform	624	0.6128	0.7240	0.6622~0.7694	0.7212	1.4413
Image recognition algorithms	626	0.7365	3.7238	0.6390~0.8160	0.1342	4.1364

According to the data in Table 3, there is problems of insufficient accuracy and large variation of calculation results in the innovative application and development trend judgment of image recognition algorithms and algorithm platforms in different levels of design. compared with the algorithm platform, the algorithm constructed in this paper has a significant improvement in accuracy. At the same time, the accuracy of the algorithm and the algorithm platform constructed in this paper is similar, both higher than 80%, which is better than the image recognition algorithm. In order to further verify the superiority of the algorithm platform, I also compared the optimal fitness values of different algorithms, and the results is shown in Figure 5.

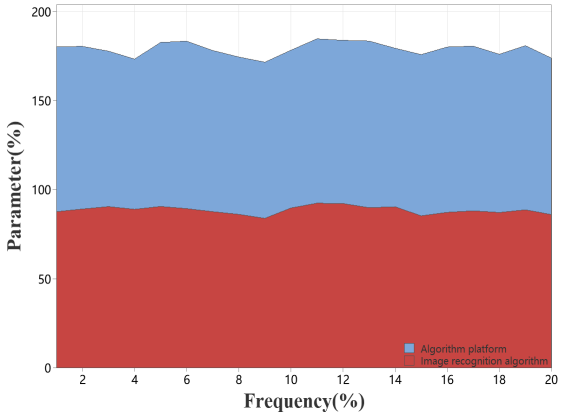

Figure 5: Performance process of eigenvalues.

According to the results of Figure 5, it is obvious that the algorithm platform performs better in image recognition. The reason for this result is that the algorithm platform continuously improves performance by increasing strategies of different dimensions such as synergy coefficients, improved weights, and convergence factors.

5 CONCLUSIONS

Aiming at the accuracy of innovative applications and development trends in design, a new comprehensive optimization scheme is proposed, which is based on algorithm platform and advanced computer technology. Initially, the security of information and the credibility of tampering with it were ensured by using the decentralized nature of the algorithm platform and its data consistency guarantee. Then, combined with computer technology, the collected data is deeply analyzed and processed in detail, so as to dig out the intrinsic attributes and potential value of the data. The study also delves into the key performance indicators needed to ensure that innovative applications and trends in design is accurate and credible, and constructs a comprehensive web-based information collection platform that plays a critical role in ensuring the accuracy of research outputs. However, it is worth noting that when applying the algorithm platform, the selection of the evaluation system for innovative applications and development trends in the design must be cautious, so as to effectively explore and utilize the advantages of the algorithm platform and further improve the accuracy and practical application value of the research results.

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