Air PM2.5 pollutant prediction and VR environmental art design index based on parameter estimation

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Abstract
The research on the dispersion and speed of environmental pollutants in the air plays an important role, which can help to enhance the impact of environmental pollutants in the surrounding areas on the research city, and carry out accurate evaluation and analysis. This paper studies the judgment of PM2.5 pollution source and VR environmental design index based on various data. In the modern environmental design, the original cultural factors are widely used. In the corresponding environmental design, the traditional culture hidden in the environmental design can be clearly seen through the design. Therefore, in the modern environmental design, we can add some traditional culture through imitation and modification, so as to make the traditional cultural value of environmental art higher. This is not only the work of art that directly characterizes the environment, but also the work of art. This review is an important step in the model building process: parameter estimation and optimization of experimental technology design. The function theorem aims at parameter estimation for finding models and unknown parameters that give the optimal set of experimental data. Optimum design goal is to design experiments to provide a dynamic linear model for subsequent identification, estimation, and/or identifying the maximum information content.

Keywords Air pollution · PM2.5 · Optimum design · Environmental design

Introduction
China is a country with a large population in the world. At the same time, China’s economy has made a very rapid development in recent years. At the same time, with the rapid development of China’s economy, the emission of pollutants has been high. Environmental pollution has become an urgent problem for our country. In order to study the generation process of environmental pollutants more accurately, the sequence of environmental pollutants in different cities is collected. Three different forms of time series were used to collect different urban environmental pollutants. First, we need to test the growth trend of the time series of environmental pollutants. There are many situations in the time series of environmental pollutants, and these situations do not have a certain regularity. From these irregular time series, we can monitor some typical changes, so as to make the time series of environmental pollutants in the growth. It is more accurate to reduce and stabilize the changes in different intervals.

In the modern environmental design, the related professionals are influenced by the design ideas and design concepts of other countries and use more diversified methods of western countries in some designs, mainly in the color with the layout structure and other different places. Some relevant personnel do not know enough about China’s traditional culture, so in the process of using the traditional culture, they lack the corresponding essence and essence, so that the traditional culture can not be reflected in the relevant design, and the traditional culture of our country can not be well inherited and carried forward. There are many traditional cultural factors in some environmental architectural designs in China. Therefore, in the process of environmental design simulation, these excellent architectural designs can be used for reference, so that our traditional culture can be more deeply and obviously reflected in the corresponding environmental art works, so that the corresponding environmental design more with our national characteristics and characteristics. Chinese traditional
culture will be better added to the modern environmental design; it needs relevant designers, with a strong traditional culture. Thus, the traditional culture is embodied in his works. Environmental art is a way for people to respond to personal and social issues that can lead to environmental issues and responses. People’s environment worldviews and beliefs can be affected by environmental technology.

Related work

Decorative materials and structures are an important specialty course in the main course of environmental arts and design in college and the most difficult course in human resource development (Lv et al. 2012). In the age of information technology, teaching art and design context of the case of comprehensive information and information storage utilization of digital technology has been implemented between agencies, and communication equipment and decoration materials discussed three goals.

This paper studies the relationship between urban air pollution and urban daily flow in big cities and analyzes the evolution process of road traffic gas pollutants in big cities (Maryam and Ali 2018). The main results show that the relationship between SO2, CO2, and SPM is inverted U-shaped, O3 is n-shaped, and NO2 is L-shaped, which also shows the negative impact of rapid urbanization and motorization on the environment in developing countries in recent years (Bo 2016). The average selection method of Bayesian model was used to determine the determinants of three kinds of air pollutants (NO2, PM10, SO2) in the range of Luz concentration (Swaine 2000). The results of econometric analysis support the hypothesis that urban structure has a significant impact on pollution concentration. Finally, a real-time pollution map of Valencia city is generated by using these pollution estimates.

In this paper, the landscape pattern of atmospheric particulate pollution in Polish cities was studied. The results showed that the presence of PM10 in green space landscape with large surface area and complex shape was related to the low concentration of PM10. Landscape indicators provide new information to explain the concentration of pollutants. It is of great significance to use green space as a filter of pollutants to shape the landscape. In modern environmental art design, there are many ways to apply traditional cultural elements, among which the design method of directly copying or copying traditional cultural elements is the most convenient (Dimitriou et al. 2008). There are many types of traditional cultural elements in China, including rich traditional cultural concepts and elements, which can be embodied in modern environmental art works by appropriate subjective design methods. For example, in the traditional cultural elements, there are many physical substances, including porcelain, statues, calligraphy, and calligraphy and painting. The application of these physical elements is convenient. By applying them to environmental art design, we can intuitively express the cultural value it contains and create a good cultural and artistic atmosphere (Zhao et al. 2009). Therefore, in the modern environmental art design, the traditional cultural elements can be directly copied or imitated to fully show the artistic expression of environmental art works. First, in the interior design of architectural engineering, traditional calligraphy, painting, and porcelain works can be placed directly in the living room, study, bedroom, and other functional areas (Ennawal et al. 2016). For example, ink painting can be pasted in the study, tea sets can be placed in the living room, and traditional cultural elements can be applied to the interior environment art design to create a good classical atmosphere and improve the artistic value of the interior environment (Mimi and Assi 2009). Second, traditional cultural elements can also be directly applied in the environmental design of landscape engineering, such as planning stone and setting rockeries according to the hydrogeological environment of landscape engineering, which can create the effect of traditional art design. In many aspects of landscape engineering layout planning, the design mode of classical gardens can be used to improve the effect of landscape engineering design.

Materials and methods

There are many different ways of pollution sources in environmental pollutants, including not only the pollution sources produced by the city itself, but also the pollution sources in the surrounding areas will spread to the research city through wind direction and air (Ouyang et al. 2014). Therefore, the research on the impact of environmental pollution sources in the surrounding areas on the research city can effectively improve the air quality of the city. Therefore, this paper uses a variety of data alignment methods to overcome the difficulty of data synchronization, so that sharing can be well combined with time and data.

Urban air pollutant

This paper collected the information of urban environmental quality and meteorological information. The initial data of these information have a certain degree of defect phenomenon; if these data can not be processed in time, it will cause the data obtained in the research to be not accurate (Guan 2012). Therefore, before the study of the model, we should make up for and deal with the initial data collected in advance, so that the lack of these data can be made up, so that we can use appropriate methods and algorithms to better collect the data. The data simulation of PM2.5 is shown in Fig. 1.

The dispersion of environmental pollutants in the air is mainly through the action of air and wind. In other words,
the impact of environmental pollutants on other surrounding cities mainly depends on different wind speeds, and the degree of pollutant transmission is also different. Therefore, this paper studies the wind direction and wind speed in the surrounding areas of cities, so as to make the research of environmental pollutants have a certain geographical relevance. The pollution simulation results are shown in Fig. 2.

Model design

Therefore, it can also be their action. When the viscous damping of an “n” system is non-proportional, the solution of equation is in the form as follows:

\[ \int_0^1 \! D \, dx = \int_0^1 \! \mu(D) \, dx = \int_0^1 \! \mu(D = 1) \, dx = \mu \{ D = 0 \} \quad (1) \]

However, there is a lack of empirical evidence on the impact of d work on art environment, belief, and behavior. Simple function D is as follows:

\[ \int_0^1 \! \mu(D) \, dx = \sum_{k=0}^n \mu \{ D = k \} \quad (2) \]

The results of the two experiments reported in this article explore the impact of environmental art, beliefs, and worldviews on the sea of contaminated plastic bag images. Let \( f(x) \geq 0 \) be a measurable function on [0,1], then

\[ \int_0^1 \! f(x) \, dx = \int_0^1 \! f \, dx \quad (3) \]

Most people use plastic or marine plastic bags in the USA, and the problem of plastic pollution is widely publicized.

\[ \int_0^1 \! D(x) \, dx \leq \mu \{ D = 0 \} \quad (4) \]

The artistic image of experimental design, research into design controls, and changes in beliefs and worldviews can directly influence the effects of short-term exposure to environmental changes. This work is one of several direct estimates of the impact of environmental arts, and in this respect, it is the first to use the scale element of the new ecosystem paradigm.

Scale element:

\[ \langle \mu \rangle^n = \sum_{k=0}^n \left( \frac{n}{k} \right) \mu^k \quad (5) \]

In addition to whether beliefs and worldviews are major research themes in the field of environmental protection, research also asks whether they are arts and communications, and whether expected behavior is affected.

\[ \alpha \int_0^1 \! \sum_{Q \leq \alpha} \, dx \leq Z \int_0^1 \! Q \, dx \quad (6) \]

Art is a way for people to relocate their environment. This clearly reflects their relationship with their manufacturers, their users, and their existing social value to the environment.

\[ A_r (f1 + f2)(x) = A_r (f1)(x) + A_r (f2)(x) \quad (7) \]

Artworks are crystals of value types, reflecting their social thinking. That is why the art of understanding makes us pay attention to other, every day, emergencies and structures, its range of activities, and its environment among people.
From this foundation, you can discover the relationship between the three main categories and the environment.

In the last two decades, complex mathematical models have been used in almost every discipline, including human engineering, industrial production, economics, transportation, biology, biomedicine, ecology, environment, pollution, and other systems, including various human activities, and developed a large number:

$$M(f) = M(f_\alpha + f_\alpha) = M(f_\alpha) + M(f_\alpha)$$  \hspace{1cm} (9)

Used for system parameters and state estimation simulation. Mathematical models are a very compact way to gain detailed insights into the structure and composition of systems and the internal relationships to the behavior of dynamic systems (Han et al. 2015). This is due to the fact that the relationships between the physical variables of the system to be simulated are mostly mapped corresponding formulas, such as the relationship between the input and output variables of the system. It can define $f$ at every point by the formula:

$$f(x) = \lim sup_{y(r)} f(y)Dy$$  \hspace{1cm} (10)

In principle, at least based on the physical mathematical system model itself on the basis of experiments, with respect to the desired B-physical system (including chemistry and biochemistry), there is, as a purely theoretical one of different ways, obtained and derived from practice. In practice, the combination of these two methods is used as the most advantageous.

There are many methods to teach background concepts in the structural process in the age of intruder’s information technology. Combination of technical and artistic skills promotes the rapid development of digital technology, designed to become a new form of symbolic art and design industry.

$$f(x) : \lim_{y(r)} f(y)Dy$$  \hspace{1cm} (11)

Digital life design gives new visual experiences and new modes of world thinking. These thoughts, which were only in the minds of the people before, may appear before them.

$$f(y)^n = \sum_{k=0}^{n} \frac{n!}{k!} y^k$$  \hspace{1cm} (12)

In the digital age, from a technical and artistic point of view, this article focuses on environmental art and design.
areas, including top national projects, government programs, and related manor levels, concerns, and organizations of people from cities (Ragozin and Yolkin 2006). With local design and overall planning of the natural environment, conceptual design and integrate the practical effect of integration design, computer applications, science, landscape architecture, coexistence, and realization of human coexistence with nature. Combination of urban and rural planning is the key. Most systems are manually operated and closely distributed. Automation system is only available in a few major cities in the country.

$$M(x) = \alpha^2 a^2 = \alpha^{2+2} \tag{13}$$

As a result, networks cannot provide sufficient data to generate reliable weather and disaster specific forecasts. According to available information, the hard-core version, which is primarily reserved, is free and publicly available. The application of the bionic concept can demonstrate the ability and architectural design ideas you have in all living things. Similarly, design is not owned by some experts; it has the intuition to survive the emotional production of lower and upper parts.

$$\{Mf > t\} \subset \{Mf/1 > t/2\} \tag{14}$$

In this study, the author can apply an interdisciplinary knowledge of bioengineering design, an understanding of the interactions between biological and architectural and design concepts formed from animals.

History of arts and sciences division and different skills in abilities, just as modern research can be divided into the same, social discourse of bilingual education is to make people aware of the benefits of combination of science and art (Kozlyakova et al. 2016). Maybe it will be strengthened, and enriched learning experience correctly developed software design language has been an integral part of this model-driven engineering; its importance and popularity increased thanks to language development language workbench.

$$f(x) \ dx \leq \alpha \tag{15}$$

It can quickly and easily create a new language in various fields. To own, in other areas, most art forms, there will be so many attempts that had no objection to language design that turns into a science or engineering a form.

An important contribution is to reduce overall mileage and propose an efficient architectural framework for the existing technology national planning system to learn relative time to work on abbreviated structures. Senior Project A * algorithm uses the concept of environmental protection based on Parametric Learning Automation (PLAN), the development of the overall work of the robotic operations (Luan et al. 2004). The robot platform features robot assistive control and navigation magnetic resistors as well as RGB D cameras and other additional sensors. People can see natural pollution, increase in noise interference, and increase in cars on the road. Particularly, in the construction industry, these poses pose challenges as a result of the use of the same consuming and sustainable production material resources, but environmental regulations have become stricter on air pollution in relation to noise (Shaban et al. 2006).

$$\Omega \leq \alpha^{-1}k1/\|k1$$

In order to promote global climate change “green growth, low carbon development” and effective response, the Chinese government is taking a number of measures to control greenhouse gases. Carbon has been consulted as the most promising, efficient, and policy tool to avoid dangerous climate change.

However, following the active system, this negative one’s attention and tension is pleasing, and eventually, with the whole organizational process and initial tension disappears. The experience of the process is no longer straight and plain; it will be ups and downs. Gestalt aesthetics allows us to understand the application areas of instability formal design theory of context and guide our design approach (Zhao and Du 2016). Advanced public environmental awareness is driven by environmental art. Based on the natural environment, we use different techniques and art to enhance our living space. It emphasizes the harmony between human progress and environmental existence and creates an artistic living environment.

Environmental arts design education resource bank, such as the Arts and Design Education “Dual Teaching Team,” create a goal, nurture, and promote sustainable development of high-level personal and practical, functional, innovative, reformatory teaching methods, and sustainable development of educational practices environmental arts education, eventually improving school education reforms and improving school innovation.

The field of environmental art design has grown rapidly for almost two decades. In the process of reform and development, social, and education, there must be the firmest needs. As an important tool in the field of environmental art and design used in labor-saving computer-based system, allowing designers to spend more time to think and design considers a problem.

$$\Delta t = f \in R^n \tag{17}$$

In the analysis of the ergonomic significance in the field of environmental art design, the end position is individual educational arrangements in the absence of complete practical processes of current education. The educational effect can be enhanced by choosing the usual situation of solution

$$f = f1 + f2 + f3$$
In addition to the actual process of implementing the uniqueness of the special dish, finally, the education reform program was confirmed by competency training.

Design is an artistic activity performed by humans to achieve a specific purpose. A trend towards modern design diversity is being implemented. Design is a tool for achieving fashion.

\[ Mf^*(x) \leq Mf(x) \]  

(19)

The design objective has moved, and the nature of the design is very vague and ambiguous. Environmental technology is closely related to our human life, production, work, and leisure. It can have a subtle effect on our emotions. As people’s quality of life improves, they will reflect on any cultural tastes and technological content as well as just existing forms of various ecological art forms.

Many of the difficulties found in parameter estimation are due to poor discriminability of model parameters. The parameter identification test should be performed before the estimation process to confirm that the parameter estimation problem is often raised (Shaban et al. 2005). In the discriminant analysis study, the assumed model, unknown parameters can be estimated in a unique way. In this matter, we can distinguish between structure and actual (or posterior) identification. The structure can only be observed and recognized in the input observation or output identification. This is one aspect of a large problem, the inverse problem of parameter estimation and/or de-related, and the experimental data obtained from statistical estimates with the highest possible quality. This is required by measuring dynamic test. In other words, based on the model of the candidates, we strive to promote the system to identify and design the best experiments.

\[ \text{design} = \sum_{n=1}^{n} \sum_{i=1}^{r_n} \]  

(22)

At the sampling time \( k \) as a parameter used in the experimental condition, the relative sensitivity \( y_{ij} \) evaluation \( i \) of the observation \( j \) is shown at the specified value \( y \).

**Parameter estimation**

The problem of parameter estimation, determining system parameters from experimental input and output data, is sometimes referred to as identification, model calibration, or regression. This is one aspect of a large problem, the inverse problem, including rear or practical viewing and parameter recognition, a priori structural viewing. Basic and exhaustive guides for parameter estimation theorems and parameter estimation are presented under maximum functionality. A very important role in the analysis and estimation of different operators is the greatest function to reproduce the theorem

\[ (Og)(x) = \sup_{D} \frac{1}{D} \int_O g(y)dy \]  

(23)

There are many research papers dedicated to the performance of every Cube D, its variants, and its applications. An important variant of Hardy Little’s greatest feature \( Og \) is the so-called score greatest feature, defined in

\[ Og = \text{sub} \left( \frac{1}{|D|} \int_D [g(y)]dy \right), \ 0, 1 \]  

(24)

Let the geometric structure \((N-1, d)\), that is, a set of \( C \), vector \( E \) in \( V (n; D) \) for some integer \( x \) such that either \( x = r_2 \), \( r = 0 \) and \( r = 1 \), and \( x (2 < l < n) \), where \( r = (r_1, r_2, \ldots, r_n) \). It is easy to see that the number of meters under the carrier \((n;
multiple) such that \(x(c) < I\) is equal to a given integer \(I\) (1 < 1 < \(n\))

\[ a_i = \sum_{i=1}^{1} ((D-1)) \quad (25) \]

Among them, \(w(C)\) represents the number of non-zero elements because the following theorem of the author is looking for the value of \(d (N + R, d)\) and playing an important role in constructing the maximum \(L (N + R, S)\)-set.

**Result and discussion**

The results presented in this article are divided into basketball training curve evaluation. First, it focuses on the proposed system where accuracy, time complexity, precision, recall, and the error rate, which includes the state-of-the-art presentation. Then, the performance of the technology was analyzed.

Table 1 designs intrusion detection, and defense system has been implemented to simulate Jupyter notebooks connected to standard data sets. The result is discussed based on evaluation parameters as follows: (i) analysis of accuracy rate, (ii) analysis of positive and negative space, and (iii) confidence regions for a pair of optimal environmental design parameter analysis.

Table 1 Simulation parameter

| Parameter      | Value         |
|----------------|---------------|
| Total logs     | 3 million     |
| Platform       | Python        |
| Tool           | Jupyter notebook |

The accuracy shown in Fig. 3 is based on a comparison between beginners and experts. Overall, novice professionals make significantly fewer mistakes in blocking. Experts omit points that are less interesting than beginners. This difference is not important. The maximal function theorem and parameter estimation are based on accuracy level based on overall error in expert in 40 years 0.3 level of error and 30 years 0.9 level of error and novices 20 years 1.2 level of error and 10 year 1.4 level in error.

The percentage of polygons in positive space was drawn more accurately and significantly than polygons in negative space, based on the position of all participants. The maximal function theorem and parameter estimation to given the value of mean scaling error in 48% and mean positioning error in 38% and mean probability error in 25%. Analysis of positive and negative space is shown in Fig. 4.

One of the common optimization design properties tends to focus experimental effort on a small set of conditions. To get the best sampling situation, this instrument concentrates around them at specific times during the experiment;

**Conclusion**

The model building loop (which is executed as an iterative process) is an important element of systems biology. Maximum function theorem and parameter estimation, here, we focus on all the important stages of this cycle. As the formula shows, the sequential execution of the artistic environment begins earlier than the rest of social sciences. Sustainable building is considered to be a way to move the construction industry on environmental protection issues. Promote sustainable building practices is the pursuit of economic, social, and environmental benefits of balanced implementation of construction projects. If we accept this, the link between sustainable development and the building becomes clear that the construction has a high economic value, with strong environmental and social impacts. As environmental

![Analysis of Accuracy](image1)

![Analysis of Positive and Negative Space](image2)
awareness increases, the issue has been more attention construction experts from around the world. Along the way, the practice to carry out the construction of sustainable development, while minimizing the impact on the environment has been advocated to promote the economic development of the construction industry. In order to reduce these adverse effects on the environment and achieve sustainable development of the industry, three major figures appear: resource efficiency, cost-effectiveness, and design of human adaptation. Maximal function theorem and parameter estimation model evaluate the analysis of accuracy in expert in 40 years 0.3 level of error and 30 years 0.9 level of error and novices 20 years 1.2 level of error and 10 year 1.4 level in error; analysis of positive and negative space for the value of mean scaling error is 48% and mean positioning error in 38% and mean probability error in 25% and performance analysis of optimal experimental based environmental design-1 with 56%, environmental design-2 with 75%, and environmental design-3 with 88%.

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Declarations

Conflict of interest The author declares no competing interests.

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