

Retraction

Retracted: Complex Discrete System Analysis of Process Design and Tourist Souvenir Making Based on Artificial Intelligence 3D Printing

Discrete Dynamics in Nature and Society

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] Y. Guo, "Complex Discrete System Analysis of Process Design and Tourist Souvenir Making Based on Artificial Intelligence 3D Printing," *Discrete Dynamics in Nature and Society*, vol. 2021, Article ID 1086851, 11 pages, 2021.

Research Article

Complex Discrete System Analysis of Process Design and Tourist Souvenir Making Based on Artificial Intelligence 3D Printing

Yuchuan Guo 

School of Design and Art, Jingdezhen Ceramic University, Jingdezhen 333403, China

Correspondence should be addressed to Yuchuan Guo; 20143312@stu.nun.edu.cn

Received 17 October 2021; Accepted 5 November 2021; Published 13 December 2021

Academic Editor: Gengxin Sun

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With the rapid development of 3D (three-dimensional) printing technology, it has been widely used in the field of ceramic arts and crafts. However, due to the complexity of 3D printing technology, it will face complex modeling and calculation when designing ceramic art crafts. To this end, the artificial intelligence algorithm is introduced, and using the data measured by the built-in modeling instruction of LAMMPS of the artificial intelligence algorithm, the program is used to reset its coordinates, length, width, height, and focal length. The obtained data are modified by postprocessing to correct its coordinates and the size of the simulation frame, so that the nanopowder model is placed in the center, forming a solid ellipsoidal aluminum nanopowder and cutting it into a three-dimensional model of teapot, which is transformed into the STL file of two-dimensional cross section, and the finished product is printed out to the 3D printer. Finally, the RTM model is used to test the quality of tourist souvenirs. The results show that the homogeneity of variance is much greater than 0.10. It can be inferred that the tourist souvenirs of pottery teapots have met the requirements of national technological quality standards.

1. Introduction

Ceramic arts and crafts occupy a very high proportion among the tourism commemorative products in China, and the product types are also very abundant. However, in the past, traditional production techniques were used, and the process was complicated. From material selection to sample preparation to firing, the process was cumbersome and time-consuming. And limited by the traditional craftsmanship, the design style of the crafts is relatively simple and the style is not rich enough [1]. With the birth of 3D printing technology, the application of 3D printing technology in the production of pottery crafts has thoroughly changed the drawbacks of the traditional production process. It greatly shortens the production time of pottery products and also provides the possibility for making more complex patterns of pottery products. At present, most of the 3D printing technologies used in practical application and ceramic crafts production are layer-by-layer bonding method and direct forming method, which is to make a layer of ceramics by spraying the adhesive according to the design style with the

spray head after the ceramic powder is laid flat [2]. Then lay a layer of ceramic powder and spray it again and again until the whole product is printed. The direct forming method omits the step of paving ceramic powder and directly mixes ceramic powder and binder to produce slurry [3]. After that, the mud is directly used for layer-by-layer spraying. Because the mud has a good consistency, it can be bonded with the mud sprayed on the upper layer, so that it can be printed layer by layer until the whole product is printed. This method is similar to the traditional ceramics making method, but the precision and complexity of making ceramics by computer are much higher than those by hand [4].

Although the technology of 3D printing of ceramics has developed to a mature stage, it still has a short time in the practical application of ceramics crafts, and there are many imperfections. For this reason, taking the Dayuyashan scenic area as an example, a tourist souvenir of pottery teapot is created by using artificial intelligence 3DS printing technology and pottery technology. Because the shape of the teapot is an ellipsoid model, the aluminum metal nanopowders previously constructed are used, and the data

measured by the built-in modeling instructions of LAMMPS are adopted. The coordinates, length, width, height, and focal length of the teapot are reset by the program. The run-out data are postprocessed to modify the coordinates and the size of the simulation frame so that the nanopowder model can be placed in the center. The solid ellipsoidal aluminum nanopowder is formed by cutting the FCC cube structure to form the overall model of teapot. Then, the elliptic sphere model is imported into the 3D printer, and the details and features of the three-dimensional model are scanned by the printing software Cura. After that, the three-dimensional model is cut into several layers and transformed into the STL format file of the two-dimensional cross section. Then, it is output to the 3D printer, and the extrusion quantity, energy intensity, and speed of the material are controlled by numerical parameters. Finally, the finished product is printed on the stack layer by layer. Therefore, it is not difficult to see that it is convenient and easy to make tourist souvenirs by using artificial intelligence 3D printing technology combined with pottery production technology, which is also the inevitable trend of future development of tourist souvenir design and production.

The main innovation of this paper is to improve the traditional technology. Because the traditional ceramic souvenirs for tourism are made by traditional processes, such as clay plastic molding and clay strip tray structure, the production time is long, and the style is simple. Using artificial intelligence 3D printing technology, the design of souvenirs is more free and diversified, the design and production time are greatly shortened, the structure is more complex, the production difficulty is also reduced, and the products can even be customized according to the requirements of tourists. Secondly, the RTM model is used to evaluate the process quality of ceramic teapot tourist souvenirs, and the actual effect of the theoretical model is verified by the actual data.

The organizational structure is as follows. The first section mainly elaborates on the research background and the organizational structure of the paper. And the research status of 3D printing technology in the pottery production process is mainly elaborated in the second section. The third section mainly describes the design process of the algorithm model. And the practical research of artificial intelligence 3D printing technology in tourist souvenirs of pottery teapots is mainly described in the fourth section. The fifth section is mainly to summarize the research results.

2. Related Work

The technology of 3D printing originated in the 1980s. At that time, Zhou and Chang-Hui developed the technology of light-curing forming and completed the stereo model construction through this technology, which became the starting point of the development of 3D printing technology. Different from the traditional three-dimensional object production, it first constructed a reasonable three-dimensional model of the object that needed to be produced by three-dimensional modeling software, then exported the model data, and stored it in a specific format [5]. Then, the data was

imported into the corresponding equipment system software. After the software identified the data file, it parsed the file, obtained the parameters, and restored the entity model according to the parameters. Secondly, the model was divided into layers, and the layered contour information of the model was obtained. Finally, according to this information, the entity was made by layers, and the whole entity was finally completed. Because of its unique production process, it attracted the attention of a large number of researchers, and more and more scholars began to study this technology in depth. Since then, scholars have developed a variety of manufacturing processes, such as selective laser sintering technology. Akhigbe et al. improved the manufacturing process of the solid based on the light-curing technology and designed the first three-dimensional printer (as shown in Figure 1) to realize the spray printing entity for the first time, which also marked the formal birth of the three-dimensional printing technology [6]. Because of the excellent solid structure manufacturing capability of 3D printing technology, it is also expected that the students will call it the new revolution of the manufacturing industry. Since then, more and more scholars and even enterprises have joined in the research of 3D printing technology. Early scholars put forward IGES file for storage of solid three-dimensional model data. Although the technology was very accurate for the expression of the three-dimensional model, the data compatibility was not high because the software processing process was too complex. So scholars put forward STEP file format technology, which can express the whole life cycle of the product and was compatible, but it was still in the perfect stage and not completely mature [7]. Luo and Zhang proposed CLI file format technology, which uses a two-dimensional level to discretize entity models. This technology was the simplest and most efficient, but because of the hierarchical processing of entities, the overall expression was deficient [8]. The accuracy and speed of printing were designed by scholars according to the shape of the solid surface, and a multiobjective optimization model was proposed to optimize the actual effect of printing [9]. Afterwards, Jia et al. studied and analyzed various factors affecting the product manufacturing process and put forward an expert system for optimizing the forming direction to further improve the printing effect [10]. The feasibility of 3D printing technology was proposed in the field of automobile manufacturing, and with the deepening of research, it has been possible to achieve the whole vehicle printing technology [11]. At the same time, in the field of various mechanical parts manufacturing, various 3D printing technology solutions have been proposed to produce products with higher precision and stronger performance [12].

Through the analysis of AI 3D printing technology, it can be clearly understood that there is abundant research on AI 3D printing technology in both academia and manufacturers, and there are more research contents in its theoretical basis and practical application. But most of them study industrial goods and seldom involve the design and manufacture of tourist souvenirs. Therefore, the application of artificial intelligence 3D printing technology is studied and

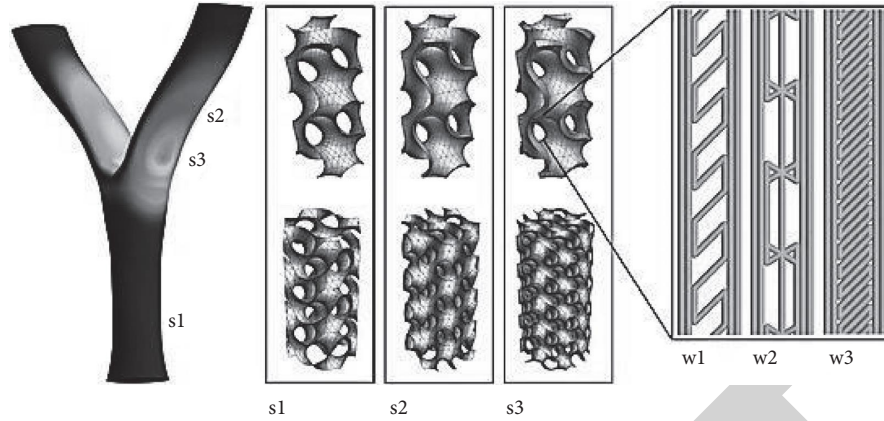


FIGURE 1: The schematic diagram of the algorithm model.

optimized combined with pottery production technology in the design and manufacture of tourist souvenirs to improve the quality of production (as shown in Figure 2).

3. Algorithmic Model Design

3.1. Artificial Intelligence 3D Printing Technology. 3D printing technology is to use computer-aided design software (Sketch Up, 3ds Max, Tinkercad, etc.) to build three-dimensional models, scan the details and characteristics of three-dimensional models through the printing software (Cura), then cut the three-dimensional models into several layers, convert the three-dimensional models into STL format files of two-dimensional cross section, and then output them to the 3D printer table. The extrusion quantity, energy intensity, and speed of the material are controlled by numerical parameters. Finally, the finished product is printed on the stack layer by layer [13]. Three-dimensional printing technology can be divided into bonding, sintering, melting and solidification, vapor deposition, and so on. 3D printing is characterized by integrated molding. The manufacturing method is the processing of sliced stack, which is different from the traditional subtraction manufacturing (as shown in Figure 3). The subtraction manufacturing process is the cutting and grinding of block material, which will produce a large number of scrap materials, while the three-dimensional printing technology belongs to the additive manufactory. This new process can effectively reduce the production of waste materials and save considerable costs [14].

Artificial intelligence 3D printing technology introduces artificial intelligence algorithms based on 3D printing technology and uses artificial intelligence algorithms to improve the intelligence of 3D printing [15]. The mathematical principle of artificial intelligence 3D printing technology is as follows:

$$\frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} + w \frac{\partial u}{\partial z} - f v = -\frac{1}{\rho_0} \frac{\partial P}{\partial x} + \frac{\partial}{\partial z} \left(K_m \frac{\partial u}{\partial z} \right) + F_u. \quad (1)$$

Assuming $\partial = 0$, the following engineering formulas can be obtained:

$$K_m \left(\frac{\partial T D}{\partial t} + \frac{\partial T u D}{\partial x} + \frac{\partial T v D}{\partial y} \right) + \left(\frac{\partial T \omega}{\partial \sigma} \right)^2 = \frac{1}{D} \frac{\partial}{\partial \sigma} \left(K_h \frac{\partial T}{\partial \sigma} \right) + D \hat{H} + D F_T. \quad (2)$$

Assuming $\partial = -1$, the following engineering formulas can be obtained (as shown in Figure 4):

$$\frac{\partial T D}{\partial t} + \frac{\partial T u D}{\partial x} + \frac{\partial T v D}{\partial y} + \frac{\partial T \omega}{\partial \sigma} = \frac{1}{D} \frac{\partial}{\partial \sigma} \left(K_h \frac{\partial T}{\partial \sigma} \right) + D \hat{H} + D F_T. \quad (3)$$

For a continuous function $f(x, y)$, its gradient at position (x, y) can be expressed as

$$\nabla f(x, y) = G(x, y) = [G_x \ G_y]^T = \left[\frac{\partial f}{\partial x} \ \frac{\partial f}{\partial y} \right]^T. \quad (4)$$

In order to simplify the calculation, the following formula can be used to express the gradient amplitude:

$$|G(x, y)| = |G_x| + |G_y|. \quad (5)$$

It is assumed that there are variables I_x and I_y to represent the first-order partial derivatives of image I in Cartesian coordinates x -axis and y -axis. Then, function $w(x, y)$ can be used to represent the two-dimensional Gauss smoothing function on Cartesian coordinates. The calculation process of the function is shown in the following formula:

$$M = \sum_{x,y} w(x, y) \begin{bmatrix} I_x^2 & I_x I_y \\ I_x I_y & I_y^2 \end{bmatrix}. \quad (6)$$

The specific number of each critical point $X^{(1)}(k) = \sum_{n=1}^k X^{(0)}(n)$ can be obtained by solving formula (7). Then, matching the critical points calculated by the normalization idea, the critical points can be obtained. The matching equation is as follows:

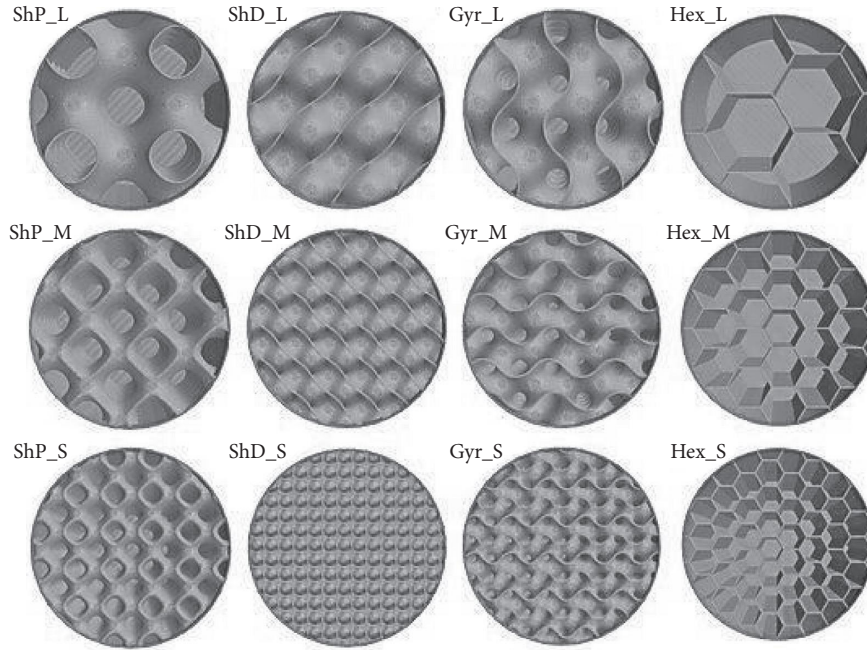


FIGURE 2: Network distance teaching based on streaming media technology has a wealth of research.

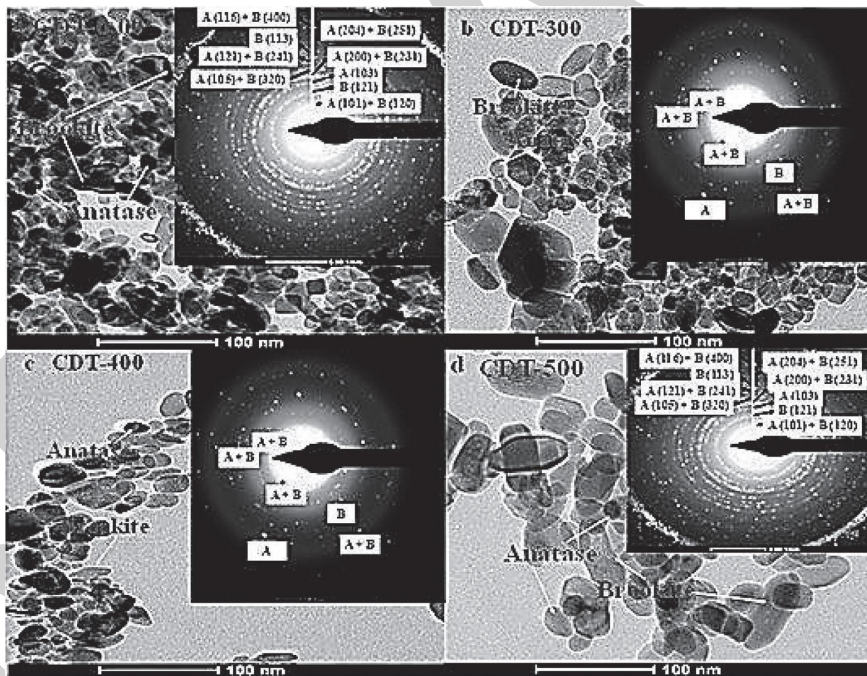


FIGURE 3: The schematic diagram of the algorithm model.

$$NCC = \frac{\sum_i (I_1(x_i, y_i) - u_1)(I_2(x_i, y_i) - u_2)}{\sqrt{\sum_i (I_1(x_i, y_i) - u_1)^2 \sum_i (I_2(x_i, y_i) - u_2)^2}} \quad (7)$$

According to the above formula, the critical points can be calculated with attribute A as the root of the decision tree. A has V values, and it divides E into V subsets. Assuming that E_i contains P_i positive examples and N_i negative examples, the information entropy $E(E_i)$ of subset E_i is

$$E(E_i) = \frac{P_i}{P_i + N_i} \log \frac{P_i}{P_i + N_i} + \frac{N_i}{P_i + N_i} \log \frac{N_i}{P_i + N_i}. \quad (8)$$

The information entropy $E(A)$ of classification based on attribute A is as follows:

$$E(A) = \sum_{r=1}^V \frac{P_r + N_r}{P + N} E(E_r). \quad (9)$$

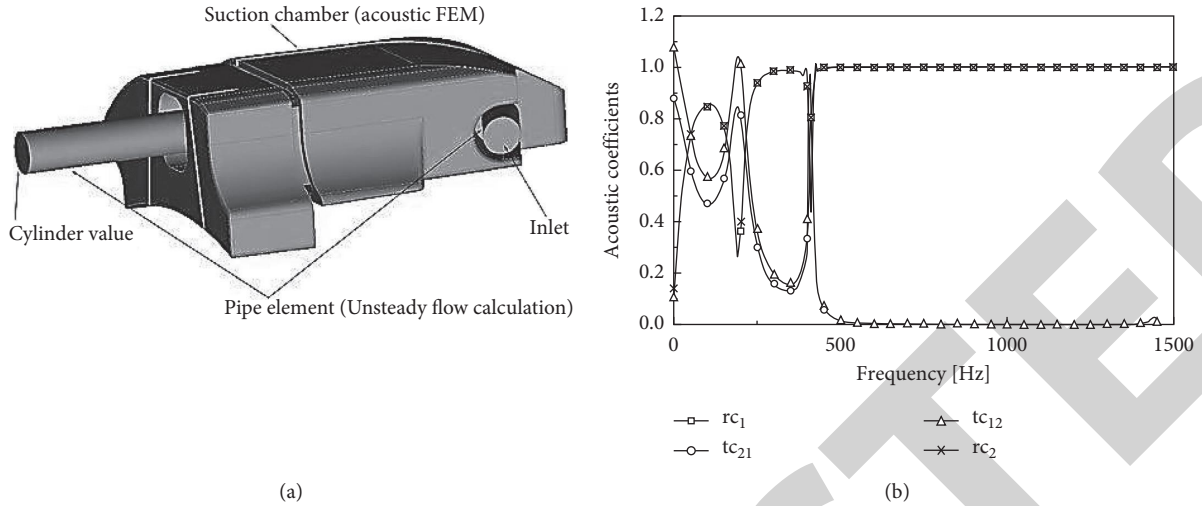


FIGURE 4: The schematic diagram of the algorithm model.

Artificial intelligence algorithm chooses the attribute A which makes $I(A)$ the largest ($E(A)$ the smallest) as the root node. Let the sample set S have C samples, and the number of samples in each class is $P_i (i = 1, 2, 3, \dots, c)$. If attribute A is taken as the bottom level of decision tree, A has V values, V_1, V_2, \dots, V_v , it divides E into V subset $[E_1, E_2, \dots, E_v]$, and assuming that the number of samples containing j class in E_i is $P_{ij} = 1, 2, \dots, c$, then the information quantity $E(E_i)$ of subset E_i is

$$E(E_i) = - \sum_{j=1}^c \frac{P_{ij}}{|E_i|} \log \frac{P_{ij}}{|E_i|} \quad (10)$$

The information entropy based on A is as follows:

$$E(A) = \sum_{i=1}^v \frac{|E_i|}{E} E(E_i). \quad (11)$$

Select attribute A to minimize $E(A)$ in formula (11) and the information gain will increase (as shown in Figure 5).

3.2. Pottery Craftsmanship. Art is a combination of technological beauty and concrete expression of cultural creativity [16, 17]. In the artworks of the earth scene, paintings and sculptures can be seen everywhere, jade ceramics can be touched everywhere, and buildings can even be living. The cultural characteristics of the artistic heritage, showing the flourishing qualities, are the best medium for the pursuit of the past. Pottery is the pioneer of human scientific and technological civilization [18, 19]. From a historical point of view, ceramics are indispensable to every period, region, culture, art, customs, and customs [20]. Examples include Terracotta Warriors and Horses of the Qin Dynasty, glazed pottery of the Han Dynasty, tricolored pottery of the Tang Dynasty, Celadon of the Song Dynasty, blue and white of the Yuan, and Ming Dynasties, bronzed-red and multicolored pottery, and enamel and pastel pottery of the Qing Dynasty. The pottery gives the appearance and life of the times; this lithography is a practical

tool for the progress of human social life (as shown in Figure 6).

Ancestors found it easier to make living utensils from a pile of clay than from hard objects such as bones. The pottery soil is hardened and hardened by roasting, fearing no rain and not fragile and firing pottery engineering: from the selection of soil, pottery and soil refining, forming, production-pull ring, splicing, mud and bricks and tiles, molding, kneading, decoration, painting, kiln, and other rings linked [21]. The experience of pottery firing is accumulated day by day, from choosing suitable raw materials, digging holes and laying bricks to build kilns to collect heat, improving tools and innovative works, and intending to create bad paintings so as to make them more perfect.

The pottery firing project has accumulated over time, from brainstorming, time-consuming and laborious work procedures, mass production, and reduction of working hours to saving fuel and raw materials in order to reduce costs (as shown in Figure 7). The study mainly discusses the application of pottery in teapot making.

The most important function of teapot is to brew a pot of good tea with complete color, aroma, and flavor. A high-quality teapot can enhance the characteristics of tea soup. Hold the teapot in your hand and gently close the lid. If the teapot has a crisp and pleasant sound and is a little elastic, it is a teapot with a medium sintering temperature. Generally speaking, the pot with a light and crisp voice is suitable for making fragrant tea, and the fragrance will be excellent. "If we brew scented tea, we may need a red clay pot with a higher kiln temperature and a more delicate organization," Jiye said. When the sintering temperature is relatively high, it is suitable for light fermented tea. The pot with a low voice is suitable for soaking tea with a strong fragrance, and the throat rhyme can be expressed for a long time (as shown in Figure 8). At the same time, contemporary teapot creation has entered a new realm, integrating the elements of the teapot into pottery works. The whole work presents a sculpture style and applies the aesthetic value of art to crafts. Morris of Bauhaus School believes that art is created for all and advocates the art created

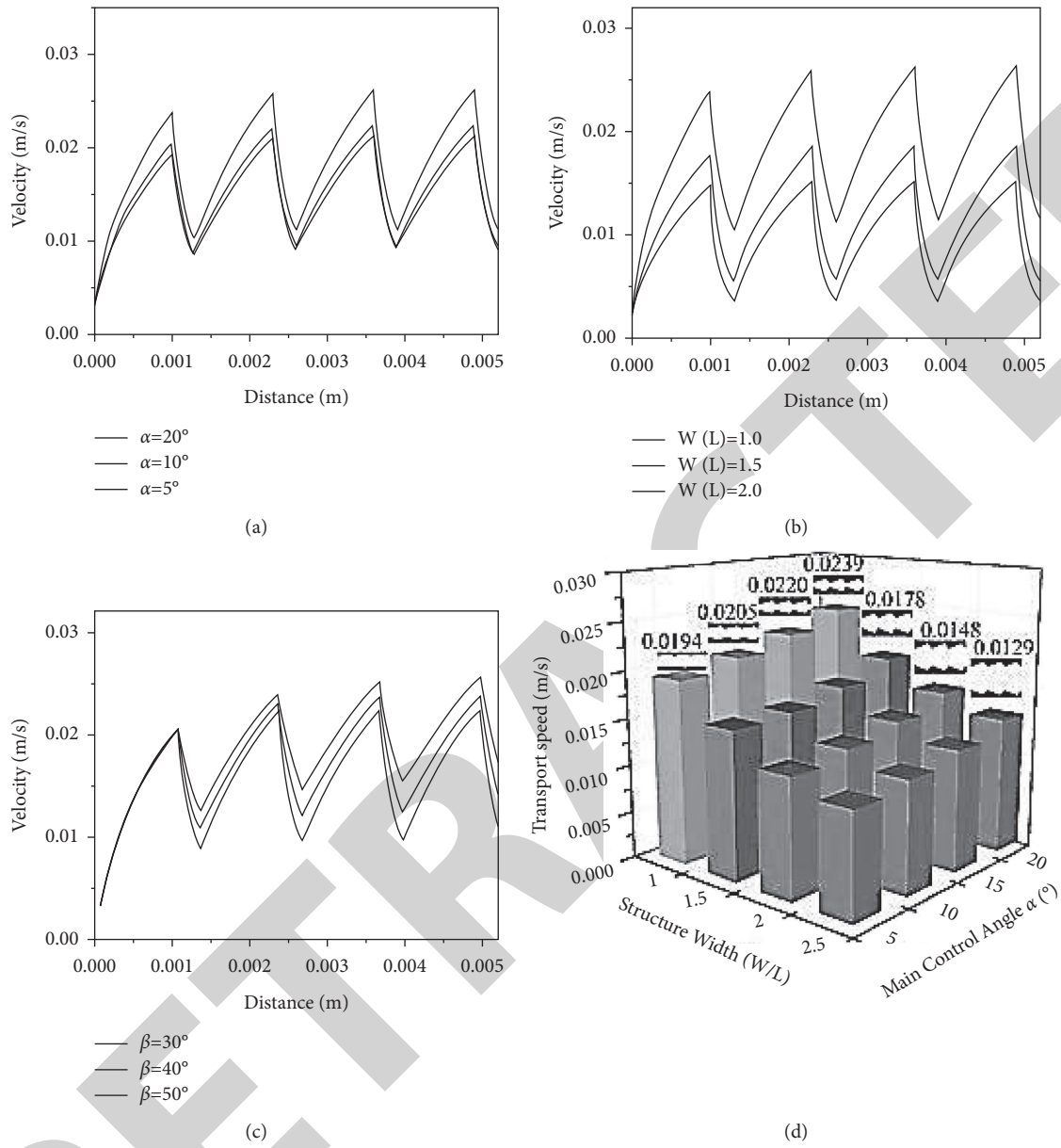


FIGURE 5: Similarity is measured by the cosine angle between vectors.

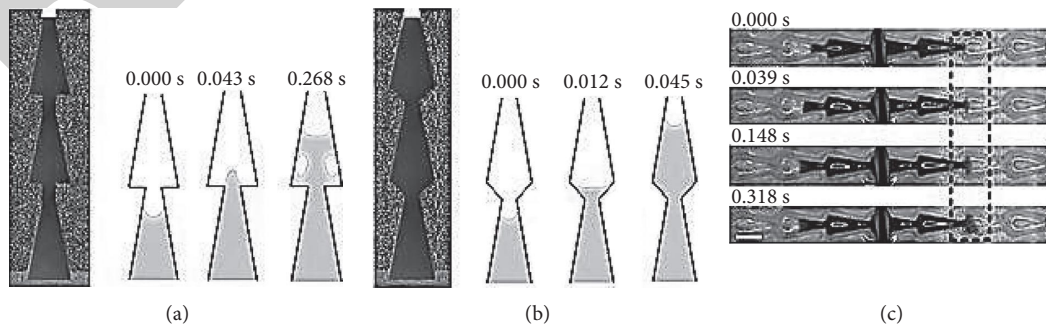


FIGURE 6: Continued.

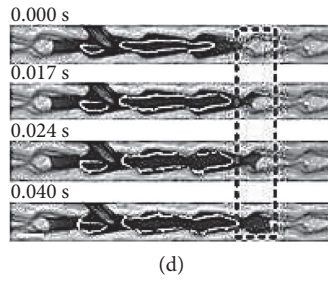


FIGURE 6: Can accept messages sent by other nodes that are not participating.

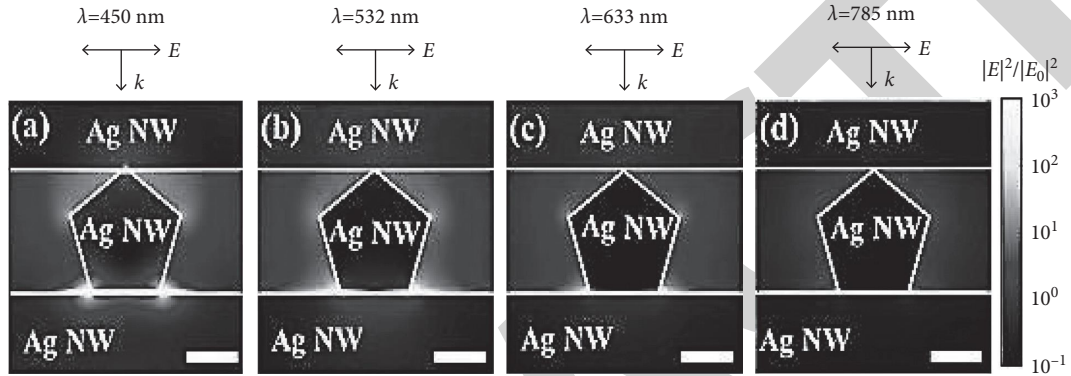
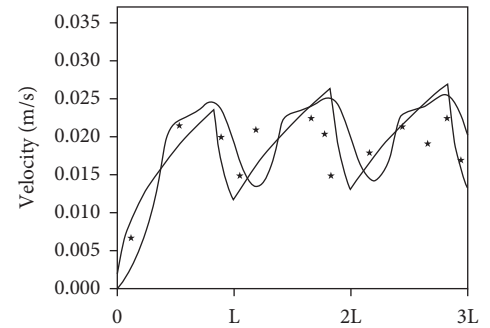
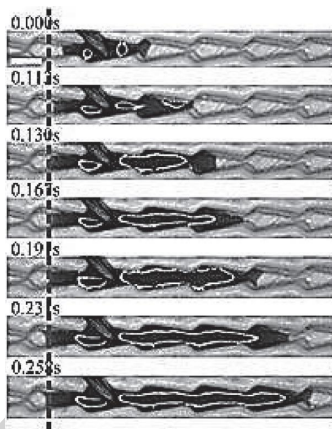


FIGURE 7: Multicast is the sending of data packets to a host group represented by a unique IP address.



— Theory (Equation 6,7)
 - - COMSOL Simulation
 * 3D Printed array

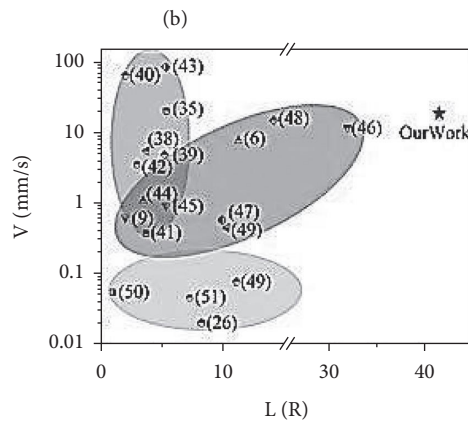


FIGURE 8: The independent Mrouter is responsible for multiple propagation.

by the people. Therefore, the vision derived from the viewing angle of the common people determines the content of contemporary pottery, so the teapot, which mainly displays the characteristics of pottery art, is called pottery pot; for example, the glazed pot with the main characteristics of firewood kettle or glaze above is everywhere. With the influence of the Modern Ceramics Creation atmosphere, the production of teapots has also caused considerable changes. The function of the teapot is not the only purpose of creation but is regarded as the main body of the artist's creative performance. With the author's idea that varies, the teapot is interpreted differently and becomes one of the important expressions in modern ceramic art creation.

Because of the skill and design of showing pottery art and interesting and ingenious display of the connotation of pottery artists, the production of teapots has also caused considerable changes with the influence of modern pottery creation atmosphere. The practical function of teapots is no longer the sole purpose of shaping but is regarded as the main body of artists' creative performance. With the idea of the creator, the teapot is interpreted differently, which has made timelessness become one of the most important forms of modern pottery creation. Whether it is to enlarge the production of Yixing ancient pots or to integrate the concept of modern sculpture into the production of ornamental pots, the pottery is taken as the precondition and practice is in the second place. They are not subject to the strict specifications of teapot making but are a self-contained one, so it is called a pottery pot. Generally speaking, only ornamental and nonpractical teapots can be called artworks, while practical teapots should be classified as crafts. Zhang Daqian, who is the late master of traditional Chinese painting, praised the works of Cai Xiaofang, the owner of the contemporary official kiln in China, and said, "Beautiful in shape, precise in color, elegant and ancient, feeling the restrained humanistic charm of Chinese culture."

4. Practical Application

4.1. Experimental Overview. Taking the Dayuya Mountain scenic area as an example, the artificial intelligence 3D printing technology and ceramic art technology are used to create a ceramic teapot tourist souvenir. Because the shape of the teapot is an ellipsoid model, the aluminum metal nanopowders previously constructed are used, and the data measured by the built-in modeling instructions of LAMMPS are adopted. The coordinates, length, width, height, and focal length of the teapot are reset by the program. The run-out data are postprocessed to modify the coordinates and the size of the simulation frame so that the nanopowder model can be placed in the center. Then the solid ellipsoidal aluminum nanopowder is formed by cutting FCC cube structure, whose diameter is set to x , and the length of Y and Z is also set. The ellipsoid is calculated by using the equation of the XYZ-Cartesian system. The center of the sphere is obtained by dividing the length, width, and height (x, y, z) by 2, and then the equation of the XYZ-Descartes system is set up according to its different radius of $a:b:c$ to establish the ellipsoid model. Since the cube is arranged according to the structure of FCC, so the cut ellipsoid belongs to the structure of FCC (as shown in Figure 9).

4.2. Experimental Simulation. The aluminum metal nanopowder model is a solid ellipsoid with a simulated ratio of 5:3:3 and an atomic number of 5144 atoms, 12010 atoms, and 23492 atoms. There are 4 simulation modes in the combined axial direction: parallel, skewed, end-to-edge, and end-to-end arrangement of four solid ellipsoids. After the combination, the test simulation is performed separately. The simulation process is divided into three stages and an assistant program to complete. The three stages are relaxation, heat balance, and heating (sintering). First, the ellipsoid coordinates are tested by the program. Three sets of coordinates are set: the first (X, Y, Z) sets to (0, 0, 0), (length, width, height) to (30, 30, 30), and focal length to 12; the second (X, Y, Z) sets to (0, 0, 0), (length, width, height) to (40, 40), and focal length to set 16; and the third (X, Y, Z) sets to (0, 0, 0), (length, width, height) to (50, 50, 50), and focal length to 20. Then, the coordinates run out are put into the LAMMPS to relax the simulation test, and the models run out after the test are arranged and combined. After the combination, the LAMMPS is used to heat balance about 1000 ps at room temperature (300K). Without plastic deformation or drift and running out of the simulation frame, the solid ellipsoidal Al nanopowders can be sintered at the rates of 1 k/ps, 0.5 k/ps, and 0.25 k/ps, respectively. After the three stages are completed, the two solid ellipsoidal nanopowders will melt into one sphere.

It can be observed from the simulation results that the solid ellipsoidal aluminum metal nanopowder will spontaneously sinter under room temperature (300 K) without laser sintering and solid/hollow spherical shape. The neck width at point a is the initial state; at this time, the neck width value is 0 at this time, the nanopowder crystal structure FCC is 83.6%, the OTHER is 16.4%. And the b point is 2 aluminum metal nanopowders just contacted together, the neck width value at this time is 57, nanopowder crystal structure FCC accounted for 83.5%, and the OTHER accounted for 16.5%. c point changes the most, there is a difference, the neck width value was 79, the nanopowder crystal structure FCC accounted for 83.1%, the OTHER accounted for 16.8%, and HCP accounted for 0.1%. And d point is closer to a more stable state; at this time, the neck width value is 79, the nanopowder crystal structure FCC is 84%, and OTHER is 16%.

The tourism souvenirs of pottery teapot can be obtained by simulating solid ellipsoidal Al nanopowder in the thermal equilibrium stage and laser sintering heating (as shown in Figure 10).

4.3. Experimental Evaluation. After the design and manufacture of tourist souvenirs for pottery teapots have been completed, the RTM model is used to evaluate the requirements of technological quality standards for tourist souvenirs for pottery teapots. The implementation steps are as follows. Find out the different evaluation indexes of the evaluated object and establish an evaluation weight matrix R . Calculate the product of each row element of the judgment matrix R and get the actual weight values of the different indexes of the evaluated object. This paper mainly uses the analytic hierarchy process to determine the weight of evaluation factors. The analytic hierarchy process

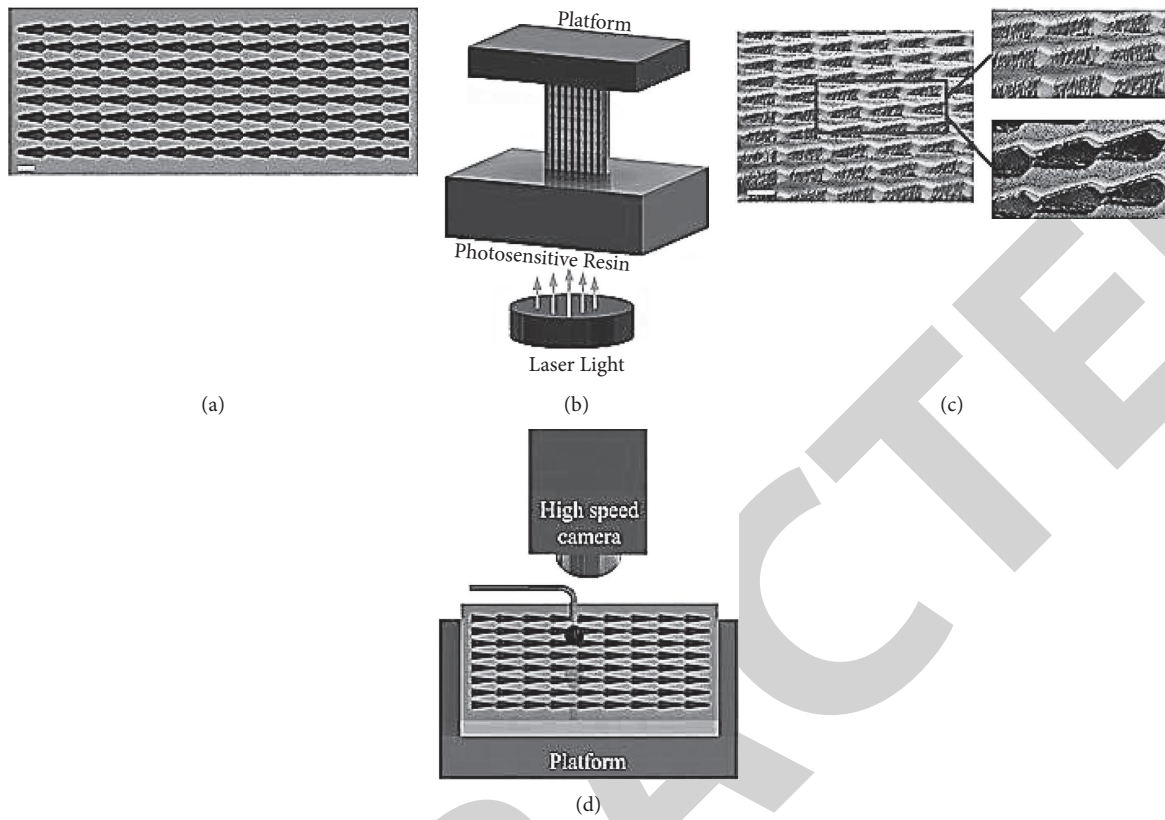


FIGURE 9: The expert model of building energy intelligent management is applied to the energy management of the building garden.

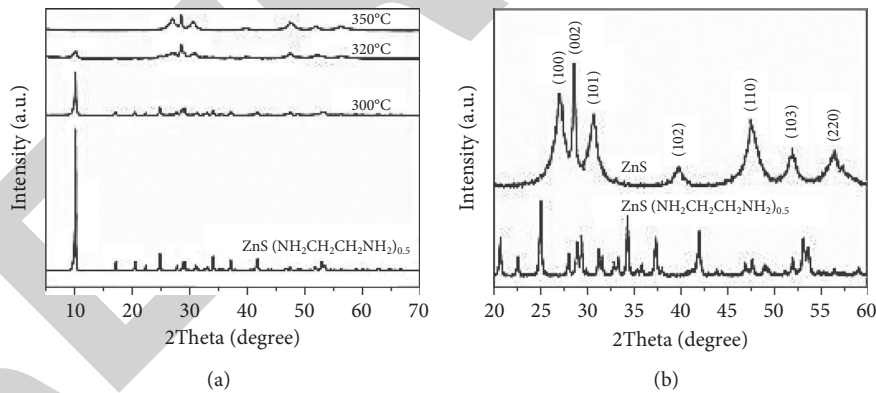


FIGURE 10: Actively issue abnormal energy consumption and alert to reduce wrong energy consumption.

decomposes the complex system into different elements by analyzing the factors and related relationships contained in the system. These elements are divided into different levels so as to objectively form a multilevel analysis structure model, and the elements of each level are compared and judged. According to a certain scaling theory, the comparative scale of its relative importance is obtained, and the judgment matrix is established. By calculating the maximum eigenvalue of the judgment matrix and the corresponding eigenvector, the importance order of the elements at each level is obtained, and the weight direction is established. The evaluation score can be calculated by calculating the weight

values and the evaluation content data. The evaluation results can be obtained by calculating the data recorded in the experiment according to the above calculation method (as shown in Figure 11). The data in the figure show that the variance homogeneity test result of tourist souvenirs of pottery teapots designed in this paper is $P = 0.662 > 0.10$. Since the result is far greater than 0.10, it can be inferred that the tourist souvenirs of pottery teapots have met the requirements of national technological quality standards.

The results show that after the design and manufacture of ceramic teapot tourist souvenirs are completed, the RTM model is used to evaluate the technical quality standard

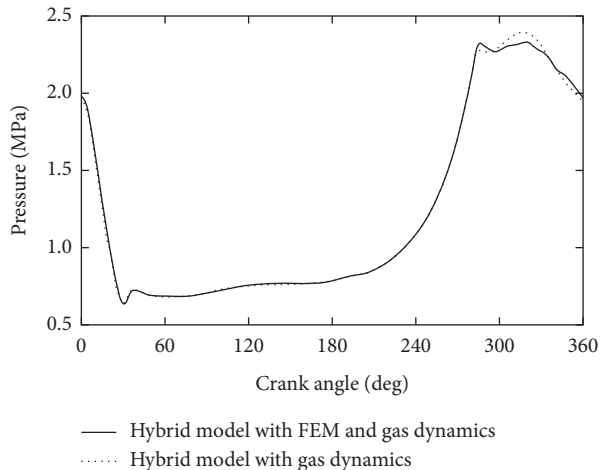


FIGURE 11: Precision instrument of watt-hour meter tester with a fault in the transmission system.

requirements of ceramic teapot tourist souvenirs. The evaluation data show that the variance homogeneity test result of the ceramic teapot tourist souvenirs designed in this paper is that because the result is far greater than 0.10, it can be inferred that the ceramic teapot tourist souvenirs have met the requirements of the national process quality standard.

5. Conclusion

Taking Dayuyashan scenic spot as an example, the artificial intelligence 3D printing technology and pottery technology are used to create a pottery teapot tourist souvenir. Because the shape of the pottery teapot is mainly solid ellipsoid, the simulation ratio is 5 : 3 : 3, and the number of atoms is 5144 atoms, 12010 atoms, and 23492 atoms. There are four simulation modes of combined axes: parallel, skewed, end-to-edge, and end-to-end alignment of four solid ellipsoids. The aluminum metal nanopowders previously constructed are used, and the data measured by the built-in modeling instructions of LAMMPS are adopted. The coordinates, length, width, height, and focal length of the teapot are reset by the program. The run-out data are postprocessed to modify the coordinates and the size of the simulation frame so that the nanopowder model can be placed in the center. The solid ellipsoidal aluminum nanopowder is formed by cutting the FCC cube structure to form the overall model of teapot. After the design and manufacture of tourist souvenirs for pottery teapots have been completed, the RTM model is used to evaluate the requirements of technological quality standards for tourist souvenirs for pottery teapots. The evaluation data show that the homogeneity of variance test results of ceramic teapot tourism souvenirs designed in this paper is that because the results are far greater than 0.10, it can be inferred that ceramic teapot tourism souvenirs have met the requirements of national process quality standards. However, the artificial intelligence 3D printing technology and ceramics production technology used in this paper also have some defects in the design, which is more complex in

the structure design of the 3D model and is not conducive to the popularization and application of this production method. Therefore, in future research, the deficiencies in this area should be improved.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

Acknowledgments

This work was supported by a grant from Jingdezhen Ceramic University.

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