Research Article

Application of Deep Neural Networks and Human-Computer Interaction Technology in Art and Design Area

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Technological development has given a new dimension to the art and design area. This research implements the deep learning model for human-computer integration technology in art and design with wireless sensor networks. In this human-computer interaction, each person and the devices are treated as network nodes. The user will act as a node requesting access privileges for utilizing the calligraphy design to learn the strokes in the self-pace mode for studies. In this research, the human-computer interaction is implemented for recognizing the strokes and curves in the calligraphy images loaded by the user. This identification will aid the user in learning different styles of calligraphy. The proposed fruit-fly optimization algorithm (FFOA) method is analyzed for high classification accuracy, less delay time, and reduced noise parameters against specific existing algorithms.

1. Introduction

Technology that uses computer-aided arts and crafts art design to save workers from laborious and time-consuming tasks and obligations has recently been introduced. It is possible to improve the quality and efficiency of arts and crafts art products by following conventional arts and crafts art design concepts [1]. Because of artificial intelligence [2], it has become possible for computer-aided arts and crafts to climbing to previously inconceivable heights in terms of both quality and efficiency [3]. A network of merchants, distributors, transporters, storage facilities, and suppliers is required to create and distribute a product to a customer. In order to differentiate themselves from their competition, companies from a wide range of sectors work together. The raw materials used in production, how and when they are procured, and the whole supply chain are all taken into account. These raw ingredients are transformed into final goods via manufacturing [3]. A network of distributors, warehouses, and merchants is formed to ensure that these items reach their intended customers.

In the last two years, the use of electronic computers has increased at a pace of 40% each year, or every two years. With an interactive computer-aided design system, work duplication is reduced, the design process is accelerated, and creative ideas are enhanced. This may have a substantial influence on the content and quality of the finished product [4]. Many computer-generated artworks are published each year as a result of the rapid advancement in artificial intelligence technologies. On a flat surface, many arts and crafts have the quality of repeating themselves again and over again, as evidenced by numerous ancient artefacts [5]. Art and craft projects can be made on computer displays or conventional colour (or black-and-white) TVs using the fundamental units of graphic design, the overarching concept of composition, and the automated generating technology for interconnecting pictures. Metals (such as stainless steel), wood (such as oak), leather (such as calfskin), and other materials may be used to produce mosaic graphics that automatically interlock, replicate, and dry without drying the joint money graphic automatic generating technology [6].

It is possible to deliver location-based services at any time and from any location thanks to a distributed geographic information system in a mobile information system

that uses high-performance wired and wireless communication networks (GIS). Integration of technologies such as GIS (geographical information systems), GPS (global positioning systems), mobile communication systems, and computer networks may be used to provide industrial and public information services among other things [7]. It is possible to utilise a GIS application technique to communicate and publish information about a user's position using mobile devices such as mobile phones in a cost-effective manner. On the one hand, if you work in a field where data is extremely mobile and changes regularly (like commercial trade or government), a mobile information system might be a great asset. On the other hand, researchers in the field of artificial intelligence may now use their findings to create computer-aided art, which broadens both the scope and the number of applications for artificial intelligence [8]. In recent years, the field of artificial intelligence has grown to be quite active, and as a result, an increasing number of computer art pieces are becoming accessible each year [9]. A new technological field called artificial intelligence (AI) has emerged in the computer world, which analyses and develops ideas and methods, techniques, and applications that are meant to duplicate, extend, and expand human intellectual capabilities [10]. Artificial intelligence may be used to make computers more human-like, allowing them to be used in the most advanced manner possible. They have raised expectations for the capabilities of computers as the number of people who use them in everyday life grows [11]. Using artificial intelligence, computer technology has expanded to previously inconceivable heights of complexity. Artificial Intelligence (AI) presently has three main fields of study: intelligent interfaces, data mining, and topic and multiagent systems. With data mining, the main goal is to find particular individuals in a large and diverse collection of application data that is incomplete, unclear, and created carelessly. The research focuses on the ability of artificial intelligence to face an entity in the selection layer of belief, desire, intention, and ability, amongst other things, as the topic of the study [12]. Having important or possibly important knowledge is the first step in the process of knowing. Recent advances in the study of artificial intelligence, particularly in the domain of thinking abilities, have been notable. Fuzzy processing and parallel processing are also on the horizon. One of the most exciting new directions in technology is the development of artificial neural networks (ANNs). As artificial neural networks continue to improve, we should expect a significant improvement in society's advancement. These computers were first suggested in the 1970s and have been a major part of the development process ever since then [13]. A great number of manual workers are freed up by computer-aided arts and crafts in the workplace, allowing them to devote more time and effort to the creation of new technologies, as well as the study and development of creative forms of expression. Art and craft production may be made more efficient by the application of computer-aided arts and crafts. Canned arts and crafts not only facilitate production, but they also remove a significant number of the challenges that artists confront while creating new works of art [14]. As a result of using computer-aided arts and crafts technology,

young designers who lack substantial design experience may be able to rise to a higher design level, enhance their design grade, and minimise the great need for designers with extensive design experience. Computer-aided design (CAD) for the arts might gain greatly from artificial intelligence. CAD is the use of computers, which helps in the modification, optimization, and analysis of designs. Computer-aided design may be found in many fields of arts and crafts technology [15]. Due to the present conditions, some advanced analytical abilities can be provided by CAD. Computer-aided process design can only apply artificial intelligence in the early stages of development, and it is limited to intelligent thinking at this time. In practice, there are no distinct varieties of artificial intelligence [16]. Instead, a variety of applications are combined to create a more complete form [17].

CAPP is used in art and design problems which can be solved with artificial intelligence technology as computer-aided art design advances. CAPP stands for computer-aided process planning. It is a technology that can be used for making plans for a product or manufacturing one. It is a link between CAD and CAM in that it offers planning for the designing part. This is because artificial intelligence mimics people's thinking patterns, allowing for the acquisition of knowledge and reasoning about them. When artificial intelligence (AI) is included in a CAPP, it is considered to be intelligent. For an intelligent CAPP system, there is a wide range of different intelligent methodologies, including fuzzy reasoning and chaotic theory [18]. Intelligence may be demonstrated by combining the advantages of artificial neural networks with perceptual image thinking in practical applications. Fuzzy inference methods can be used in conjunction with other forms of logical reasoning to enhance a person's overall intellect and thinking capacity [19]. As compared to mechanical product design theory, there is very little research on CAPP's design theory available. The foundation layer, the tool layer, and the platform layer of the design theory and methodology all serve various purposes. This overlap between CAPP theory and mechanical product design theories is particularly apparent in terms of the intelligent design process [20]. The three levels of intelligent CAPP design theory and method architecture are regarded as the foundation scientific layer, the information technology, and intelligent design methodology layers (or intelligent design method), respectively.

In the field of art and craft design, there is high applicability for development. There are many variables that can change at any point during the design and production process. In computer-aided art design, these characteristics are likely to cause complications, especially when combined [21]. Artificial neural networks have enhanced the design of computer-aided arts and crafts (CAPP) and efficiently tackled these problems. As a means of overcoming the problem of network connectivity, artificial neural networks (ANNs) based on biological principles are being created. Many nonlinear processing units identified have been found here. Modern information technology units are very comparable to those in today's technical environment [22]. Associative memory, self-organization, and self-learning are

only a few properties of the artificial neural network that may be utilized to solve issues when given a task to tackle. In computer-aided art design, artificial neural network technology is the most advantageous since it is able to adapt and adjust the system as necessary. While keeping track of its flexibility, the neural network will also be able to examine its beginning core values and real system conditions [23]. The special monitoring approach consists of deduction and adjustment at each back node and pushing and adjusting at the end of the neural network. When it comes to product creativity and craftsmanship, there is an abundance of ambiguity that can only be resolved via experience. Developing a search or derivative system using a CAPP system that depends solely on group technology would fail since it would not be able to collect different types of information effectively [24]. The CAPP system uses artificial neural network technology as one of the most important AI applications. Artificial neural networks are based on the same principles as organic nerve systems when it comes to coping with the current environment. This system's key characteristic is that it is made up of a large number of tiny nonlinear processing units that are linked in parallel and stores information in a dispersed manner [25]. This study focused on evaluating human-computer interaction technology in art and design using deep neural networks.

The contributions of this study are as follows:

(1) It focused on analysing the image data that was either transferred to the user or made only for the display with effective visualization

(2) It analyses the accurate validation of the recognised image by using a deep learning algorithm

(3) It uses equations of motion for categorising human targets and objects

(4) The intelligent system is used for the identification of the artwork and classification according to the required category

2. Materials and Methods

The dataset utilized in this research is the collection of Chinese character writings by famous Chinese calligraphers. This collection includes approximately 5,350 JPEG images which are of 64×64 pixels. The collected images are validated and transformed into the standardized shape by the person who prepared them. For training and testing the image, the dataset is divided into 80% and 20%, respectively. In this research, the recognised image data are either transferred to the user or made only the display with a better visualisation.

2.1. Motivation of the Study. Deep learning is an essential component of human-computer interaction (HCI) for art and design processes through interactive control systems with the aid of wireless sensor networks. In general, human-computer interaction is also dependent on the flexibility of a visual analytics system. It can be used in HCI to encapsulate non-invasive human hand art by directly stimulating just the human hand. Accurate validation and analysis of human art and design through real-time splash damage instances is considered difficult in HCI due to the complex background. Moreover, human hand art is highly dynamic, so addressing the noise problem requires a flexible approach.

Furthermore, structural thermal imaging was created to overcome the traditional transmitter problem, including face recognition and human identification in single target scenarios. Destination mobility and body movement investigate human art and design behaviour in spatial thermal imaging. Equations of motion are used to classify human targets and objects. The intelligent system plays a major role in the identification of the artwork and classification thereof according to the required category. This research work focuses on the classification of art data based on the order design optimization technique (Figure 1).

2.2. Architecture. The user will start interaction with the computer or any other communication device to perform the search. The search is equipped with intelligent technology as it provides suggestions or choices of selection during the search. In this case, human-computer interaction starts with the support of the Internet connection. Users in each node can access the dataset available at any remote location to transfer and retrieve images. The calligraphers will perform the writing work and update the database, which is designed with an intelligent system. This intelligence in the database will send an automatic alert or notification to the user who was looking for the model. Also, if any user is interested in learning the calligraphy writing mechanism, a request can be made. The intelligent server node will give the user multiple choices of which calligraphic notation he would like to learn, along with details about the calligrapher. The user can also select the visualisation of the calligraphy data with some animations to learn the work. The fruit-fly optimization algorithm is used in this research work to focus on faster data transfer and visualisation for human-computer interaction in art and design. Any research work with art and design will involve analysis with images. Processing with images will also take longer than text and numerical data. A fruit fly is an insect which makes its movement towards the fragrance of the fruits. In this scenario, the insect is considered to move towards the user who is in high need of learning calligraphy and is assumed to be identified with the login credentials of the user to the contents to which he has access privileges. After completion of the needed task or session timeout, the intelligent system will cause the user node to disconnect from the complete wireless network connection. This challenge can be attempted to be overcome as an extended work by extending the duration of the session or confirming or informing the node about the network disconnection in advance.

The proposed work focuses on implementing deep learning techniques to evaluate the important component of human-computer interaction (HCI) to art and design processes via interactive control systems using a wireless sensor network. In general, the flexibility of a visual analytics system is also important in human-computer
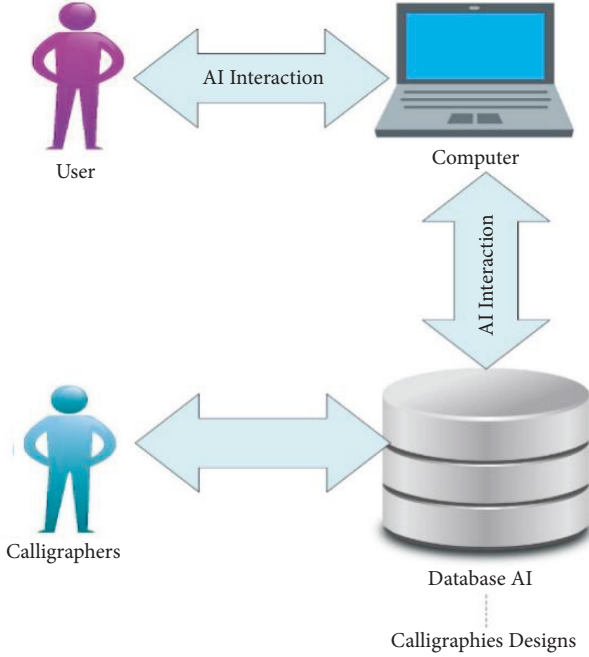
Figure 1: Model diagram of the proposed work.

interaction. In HCI, it can be used to encapsulate non-invasive human hand art by directly stimulating only the human hand. Because of the complex background, accurate validation and analysis of human art and design through real-time splash damage instances are considered difficult in HCI. Furthermore, because human hand art is highly dynamic, addressing the noise issue necessitates a flexible approach. The fruit fly optimization algorithm (FFOA) is an innovative method for finding optimal solutions predicated on the fruit fly's food-finding behaviour. Then, once it is close to the food, it can use its sensitive vision to find food and the company's flocking location and fly in that direction as well. As a result, we are concentrating our efforts on human hand art and design via real-time splash damage instances, which is considered difficult in human-computer interaction.

The human-computer interaction exhibits few indications of motion or preserved disposition. The inclination for general area is derived from the perseverance of a straight path between such linear motions. Based on the concepts of linear motions, the FFOA is implemented to optimize the movement and the direction from the gradient in the context of a movement correlated between both the head and legs, along with the head position is manageable at that angle. H_1, H_2, H_3 are human targets that can able to run position to a head and a right inclination at an angle more towards a good direction. The arm direction of the head could be comparable to provide with H_T. Also the range of motion is from the initial interactive environment, $[R_H, R_H, R_H]$ are amplified with focus on transcription, engaging systems and also the precession between the interaction designs are represented as in the following equations (1)–(3):

$$H_{T_1} = \sum [R_{H_1}, R_{H_1}, R_{H_1}] \begin{bmatrix} \cos\vartheta & -\sin\vartheta & 0 \\ \sin\vartheta & \cos\vartheta & 0 \\ 0 & 0 & 1 \end{bmatrix} + \ln[n_t\, m_t\, p_t], \tag{1}$$

$$H_{T_2} = \sum [R_{H_2}, R_{H_2}, R_{H_2}] \begin{bmatrix} \cos\vartheta & -\sin\vartheta & 0 \\ \sin\vartheta & \cos\vartheta & 0 \\ 0 & 0 & 1 \end{bmatrix} + \ln[n_t\, m_t\, p_t], \tag{2}$$

$$H_{T_3} = \sum [R_{H_3}, R_3, R_{H_3}] \begin{bmatrix} \cos\vartheta & -\sin\vartheta & 0 \\ \sin\vartheta & \cos\vartheta & 0 \\ 0 & 0 & 1 \end{bmatrix} + \ln[n_t\, m_t\, p_t]. \tag{3}$$

The human body is a target-oriented matrix with linear motion, and the translation variable of a blending process can be approximated using equations (1)–(3).

The targeted human necessities are recognised by direction vector K_d, width d_t, and height h_t; its ratio (h_{t_1}/d_{t_1}) suggests the target H_1 moving more towards a single viewpoint interactive system. The ratio (h_{t_1}/d_{t_1}) suggests the target H_1 moving it towards an interactive sound system; cs is the orientation. Rotations and translation among interaction design are denoted by the letters $c, c-1$, respectively. These variations have been noted as the target H_1 moves and thus revised for a time r by equation (4). The height h_t and width d_t of the thermal imaging image are used to evaluate the technique vector orientation K_d.

$$K_d = \sum \begin{cases} d_{t,c} - d_{t,c-1}, & \text{if} \left(\dfrac{h_t}{d_t}\right)_c - \left(\dfrac{h_t}{d_t}\right)_{c-1} = 0, \\[2mm] 0, & \text{if} \left(\dfrac{h_t}{d_t}\right)_c - \left(\dfrac{h_t}{d_t}\right)_{c-1} \neq 0. \end{cases} \tag{4}$$

The orientation width is denoted by d_t, the orientation height is denoted by h_t, and the rotation ratio is denoted by (h_t/d_t). If there is no variance between sequential proportions, the orientation vector K_d is obtained from the variability here between widths of the sequential objective in successive pictures.

The overall feature extraction position for the specific element is A, and the feature-obtained point for a specific target is xf. The linear movement feature point $n_{f,c}$ is accompanied after evaluation of about the mean exact location until the absolute amount of A. The finished precise position average at time $c-1$ is subtracted from the current mean. This variability supports the dedication of the position and horizontal variable amplitude b_t from the following equations (5)–(8):

condition (1):

$$b_t = \lim_{f \longrightarrow 1} \frac{\left(\sum_{f=1}^{A} n_{f,c}\right)}{A}, \tag{5}$$

condition (2):

$$b_t = \lim_{c-1} \frac{\left(\sum_{f=1}^{A} n_{f,c-1}\right)}{A}. \tag{6}$$

After computing as

$$b_t = \lim_{f \longrightarrow 1} \frac{\left(\sum_{f=1}^{A} n_{f,c}\right)}{A} - \frac{\left(\sum_{f=1}^{A} n_{f,c-1}\right)}{A}, \tag{7}$$

$$K_d = \sum \sqrt{K_d^2 + b_t^2}, \tag{8}$$

$n_{f,c-1}$ signifies the feature extraction points for a specific target, as debated in the equations (5)–(7). A represents the total number of extracted feature points for a given target. The final precise position estimate at period $c - 1$ is subtracted from the current mean r. cw signifies the strength and direction of the linear vector. The final projected path vector is denoted by K_t.

The frame is divided into $T = (H_s/y_{ver})(D_s/y_{hor})$ molecules to investigate each segment in detail. The number of samples in the horizontal plane is y_{hor}, and the percentage of layers in the vertical position is y_{ver}. The human objective is selected using affiliated elements that are distinct from those other substances in the destination frame. Equation (4) adds the pixel value for each cell to measure the optimal human target specialty for the corresponding cell.

$$F_t = \sum_{n=F_n}^{n_u} \sum_{m=F_m}^{n_u} v(n, m). \tag{9}$$

Aw seems to be the increased cellular pixel value, as seen in equation (4). The pixel q is assigned to every pixel in a cell, as well as the exact locations of this pixel within cells are (n, m). The following equations (10) and (11) are used to calculate the final pixel directions from the underside and also the left side of every cell:

$$(nm)_u = f((nm)_u) = \begin{cases} n_u, & if(y_{hor}) = F_n + T_n\left(\dfrac{D_b}{y_{hor}}\right), \\[3mm] m_u, & if(y_{ver}) = F_m + T_m\left(\dfrac{H_s}{y_{ver}}\right), \end{cases} \tag{10}$$

$$n_u = F_n + T_n\left(\frac{D_s}{y_{hor}}\right) m_u = \sum F_m + T_m. \tag{11}$$

Equations (10) and (11) present the complete pixel exact locations of each compartment inside a thermal imaging image, in which y_{hor} seems to be the quantity in the horizontal position as well as m_{ver} is the number of nodes in the vertical position. H_s and S_a are also the target frame's length and size, respectively. The starting exact locations of each cell, F_n and F_m, are defined from the goal frame's current directions as well as frame length and width from of the resulting interpretations as shown in the following equations (12)–(14):

$$(F)_{nm} = f((F)_{nm}) = \sum \begin{cases} F_n, & if(y_{hor}) = \dfrac{D_u}{y_{ver}}(T_m - 1), \\[5mm] F_m, & if(y_{ver}) = \dfrac{H_u}{y_{ver}}(T_m - 1), \end{cases} \tag{12}$$

$$F_n = \sum \frac{D_u}{y_{hor}}(T_n - 1), \tag{13}$$

$$F_m = \sum \frac{D_u}{y_{ver}}(T_m - 1). \tag{14}$$

Every mobile phone index is calculated from $T_m = [T - 1/y_{ver}] + 1$ using the floor purpose after division and $T_m = T - T_m y_{hor}$, as shown in equations (12) and (13). This selects the relationship of such kinematics for every art and design image of an apparatus consisting after establishing the linear motion for arm, leg, and head areas. Extra correlation result generates dynamics by combining the human target art and design directions to select the very last path direction with both the highest association results.

3. Results and Discussion

For this study, the proposed algorithm is compared with the existing algorithms such as motor unit spike trains with blind source separation algorithm (MUST-BSSA), the linear discriminant analysis and extreme learning machine (LDA-ELM) method, and hidden Markov model and singular value decomposition (HMM-SVD) methods.

Figure 2 depicts the performance ratio analysis of the suggested FFOA system. The movement direction from of the gradient of a head is supplied by perspective between both the head and legs, and head location is accessible at that angle. H_1, H_2, H_3 are the human targets that can be able to run position to a head and a right inclination at an angle more towards a good direction. The arm direction of the head could be comparable to provide with H_T. To identify human movement, the body's direction of travel must be tracked throughout the regular exercise. Data analysis to effectively depict such motion aids within the detection of the operation, which also aids this study successfully. In comparison to those other technologies, its performance of the human-computer interface based on the requirement of hand art recognition and classification research results is really quite effective for calligraphy application. If the intelligent system fails to recognize the art work, then it will be highly difficult for the user to get good knowledge in the expected field, and the results are shown in Table 1.

The simulation results indicate that, when compared with existing approaches, the suggested technique could evaluate the human target angle with high precision. Figure 3 depicts the average recognition ratio achieved with our suggested FFOA methods. From the figure, it is observed that the proposed FFOA algorithm shows the highest recognition ratio of the highly needed user with a minimum
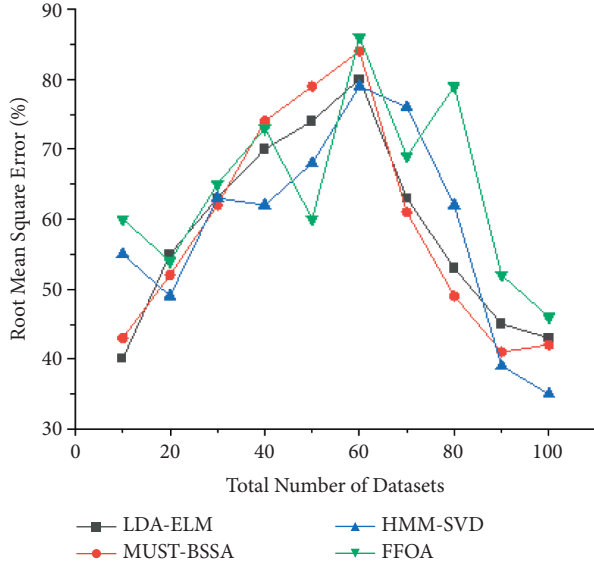
FIGURE 2: Evaluation of human-computer interaction technology in art and design by using mean square error.

TABLE 1: Performance result for the evaluation of human-computer interaction technology in art and design by using mean square error.

Total number of datasets in different methods	Mean square error overall accuracy (%)
LDA-ELM	47
MUST-BSSA	45
HMM-SVD	25
FFOA	49

recognition ratio of about 85%. Also, the percentage is fluctuating between 85 and 90% even when there is an increase in the number of records or the user's request. The other existing algorithms used in this research work LDA-ELM, MUST-BSSA, and HMM-SVD have achieved a maximum accuracy of 79%, 83%, and 79%, respectively. The fluctuating accuracy ratios are 45% to 83%, 45% to 83%, and 35% to 79%, respectively. Also, the existing algorithm's accuracy faces a heavy downfall when there is an increase in the number of users.

Figure 4 depicts the suggested FFOA method's delay time. The ratio of a determined design to undesirable environmental noise components demonstrates the effectiveness of an art and design measurement. A transmitter design provides more information to predict intension, increasing predictive performance. Nonetheless, noise sources from different sources are feasible, and art and design analysis may well be contaminated. The amplifier is designed and then used to dismiss or eliminate noise levels to maximize the transmission ratio. Though the number of datasets increases, the delay in making responses is significantly less than the existing algorithms, with a minimum difference of 45% lesser duration than the existing algorithm. The minimum delay in data transfer observed by the existing LDA-ELM, MUST-
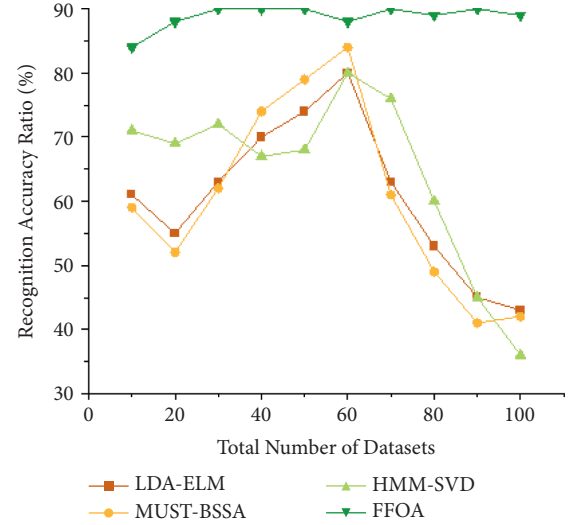

FIGURE 3: Suggested FFOA method's overall human-computer interaction technology in art and design recognition ratio.
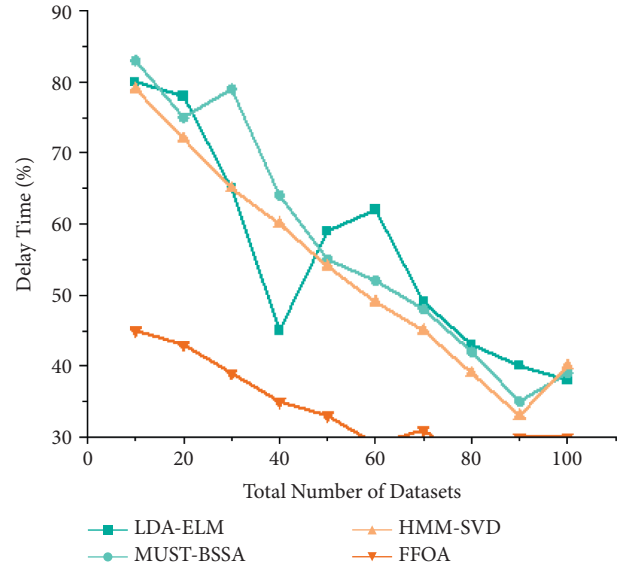

FIGURE 4: Decomposed human-computer interaction technology in art and design determination of delay time.

BSSA, and HMM-SVD algorithms is 44%, 45%, and 46%, respectively, whereas the proposed FFOA has shown its least by 25% (see Table 2).

The error of tremendous views is solved by designing viewpoints and stereosensors. The location distance between a designated target and an interactive environment is the degree of goal depending upon whether the operation is equaled over a traceability cycle. It is known as the normalised error function. Compared to other conventional methods, the suggested technique reduces computational error. Figure 5 depicts the normalised data processing error when the proposed FFOA method is used. Unidentified or lately recognised users in human-computer interaction are categorised under the error rate. According to the terms of sensor networks, it is very important to note that the error

TABLE 2: Result analysis for the art and design determination of delay time.

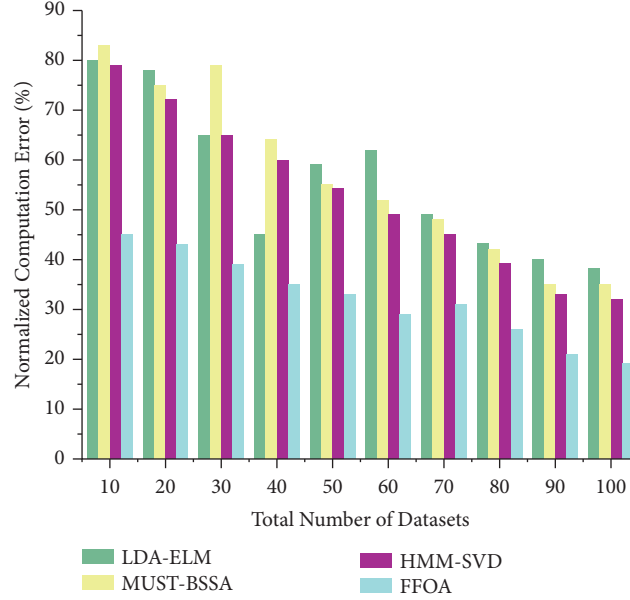| Total number of datasets in different methods	Delay time (s) overall accuracy (%)
LDA-ELM	44
MUST-BSSA	45
HMM-SVD	46
FFOA	25

FIGURE 5: Normalised human-computer interaction technology in art and design error evaluation.

rate should be at the very least, even with the increased number of users. Additionally, there is an increased requirement for on-time transmission of the data without or with less data loss. End-to-end delivery of data packets is essential in this situation. From Figure 5, it can be observed that the computation error in the existing algorithms, such as LDA-ELM, MUST-BSSA, and HMM-SVD, is always high when compared to the proposed FFOA algorithm.

The existing algorithms considered for performance analysis in this research are as follows: motor unit spike trains with blind source separation algorithm (MUST-BSSA), hidden Markov model and singular value decomposition (HMM-SVD) methods, and the linear discriminant analysis and extreme learning machine (LDA-ELM) method. Compared to these models, the proposed optimization method for noninvasive human-computer interaction named "fruit-fly optimization algorithm (FFOA)" outperforms them with high classification accuracy, less delay time, and reduced noise. Table 3 represents this comparison analysis and shows that as the dataset increases, the error rate in the proposed system is greatly reduced to a minimum of 19%, which is the least among other existing algorithms. Its percentage is 13%, 16%, and 19% less when compared with the HMM-SVD, MUST-BSSA, and LDA-ELM methods, respectively.

TABLE 3: Comparison result for human-computer interaction technology in art and design.

Number of data	LDA-ELM (%)	MUST-BSSA (%)	HMM-SVD (%)	FFOA (%)
10	80	83	79	45
20	78	75	72	43
30	65	79	65	39
40	45	64	60	35
50	59	55	54	33
60	62	52	49	29
70	49	48	45	31
80	43	42	39	26
90	40	35	33	21
100	38	35	32	19

4. Conclusions

The development of artificial intelligence paved the way for designing computer-aided arts and crafts and enhanced the quality of production. The enhancement of artificial technology and different algorithms and technologies makes the design of computer-aided arts and crafts easier. Deep

learning techniques place a high demand on the computing power of experimental equipment and computers. This study focused on evaluating human-computer interaction technology in art and design using artificial intelligence. The proposed fruit-fly optimization algorithm (FFOA) method is analysed for high classification accuracy, less delay time, and reduced noise parameters against specific existing algorithms. It is highly suggested to enhance the accuracy and complexity of the model for future studies.

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 paper.

Acknowledgments

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