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Single-Valued Neutrosophic Partitioned Heronian Mean Operator for Design Intelligence: Evaluating the Quality in Digital Media Art Design Powered by Computational Tools

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Abstract: Computational techniques have revolutionized media art and design in the ever-changing digital realm. To assess the caliber of digital media art, this research investigates the idea of Design Intelligence, which is the fusion of creativity, computing, and aesthetics. This study evaluates digital design projects using a multi-criteria assessment methodology that considers important aspects including sustainability, technical execution, creativity, user engagement, and utility. As generative algorithms, interactive platforms, and artificial intelligence become more prevalent in creative processes, it is imperative that educators and practitioners comprehend the qualitative features of these designs. To provide a thorough knowledge of design efficacy in a computational setting, the study presents a systematic assessment mechanism backed by expert input and qualitative analysis. This study uses the Single-Valued Neutrosophic Partitioned Heronian Mean Operator to solve uncertainty problems. The findings provide light on how new technologies affect design quality and offer suggestions for raising professional standards and educational procedures in the realm of digital media.

Keywords: Single-Valued Neutrosophic Set; Partitioned Heronian Mean Operator; Design Intelligence; Digital Media Art; Computational Tools.

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1. Introduction and Related Work

For instance, an expert may respond that the likelihood that a certain assertion is true, untrue, or doubtful is 0.6, 0.5, and 0.1, respectively, when we question them about it. It is obvious that FSs and IFSs are not equipped to handle this issue. Neutrosophic sets (NSs) with three membership functions—truth, indeterminacy, and falsity—were created by Smarandache et al. It is observed that NSs extend the standard interval [0.1] of IFSs by lying on a non-standard unit interval]0−, 1+[[1], [2].

While the integrated uncertainty is dependent on the membership and non-membership degrees of the IFSs, the uncertainty reported here, or the indeterminacy factor, is dependent on the truth and falsity values. Therefore, x(0.6, 0.1, 0.5) may be used to describe the previous example of NSs. Although various techniques utilizing neutrosophic information have been studied, the non-standard unit interval limits their usefulness. Therefore, as a particular instance of NSs, single-valued neutrosophic sets (SVNSs) were proposed[3], [4].

Recently, SVNSs have gained popularity to characterize DMs' preference information. They have also garnered a lot of research interest in fields including information measures, outranking relations, and aggregation operators[5].

1.1 Related Work

As information technology advanced, digital media art emerged as a result. Interface design for digital media art has gained increasing attention since it provides a direct line of connection with consumers and directly affects their experience. Algorithms for artificial intelligence have permeated every aspect of societal development in the framework of its ongoing growth. The foundation of this essay is the development of a digital media art interface design system through the integration of visual components with artificial intelligence algorithms.

The system hierarchy is built from the user window and displays models in accordance with the analysis of system requirements and the algorithm of artificial intelligence graphic elements; the media library is used to realize software and driver development, and the window and common controls are implemented. Based on this, the design of the system's essential features is finished to guarantee the impact of system operations, and windows and common controls are created and displayed. The result demonstrates that, when the number of iterations is modest, the method in Hua Tian [6] had a very high likelihood of finding the best solution in real-world design applications, about 90%.

To verify the effectiveness of intelligent optimization approaches in computer-aided design (CAD) and multimedia interactive technology, An et al. [7] presented a sophisticated optimization algorithm specifically designed for new media art. To do this, we process and analyze datasets that include new media art using particle swarm optimization (PSO) and multi-objective genetic algorithms (MOGA). MOGA's improved dependability is demonstrated by comparative trials that show it works better than PSO in terms of classification accuracy, meaning absolute error (MAE), and recall rate. These results highlight MOGA's ability to manage the data analysis of multimedia resources and provide more reliable optimization help for CAD in the context of new media art.

With its promising future, computer-aided art design has emerged as a new medium for artistic expression that offers designers a fresh way to express themselves and fundamentally alters both the aesthetics and thought processes of art design. The primary realistic form and significant growth path of current art design is computer-aided design (CAD), which may be made much more efficient and of higher quality with the aid of contemporary artificial intelligence (AI). Wang et al. [8] proposed an art image enhancement algorithm based on deep belief networks (DBN) to realize the innovation of traditional art design methods and improve the application of CAD technology in art design. It also extends the design optimization-driven deep learning (DL) framework with task-specific algorithms to improve interactive experience.

2. Preliminaries

This section shows the definitions of Single-Valued Neutrosophic Partitioned Heronian Mean Operator (SVNPHM)[9].

2.1 Partitioned Heronian Mean Operator (PHMO)

Definition 2.1.1

The Heronian Mean (HM) can be defined as:

$$HM_{p,q} = (d_1, d_2, \dots, d_n) = \left(\frac{2}{n(n+1)} \sum_{i=1,j=1}^{n} d_i^p, d_j^q\right)^{\frac{1}{p+q}}$$

$$p \ and \ q \geq 0$$

Definition 2.1.2

The PHMO can be defined as:

$$PHMO_{p,q}(d_1, d_2, \dots, d_n) = \frac{1}{t}\left(\sum_{l=1}^{t}\left(\frac{2}{|P_l|(|P_l|+1)} \sum_{i=1,j=1}^{|P_l|} d_i^p, d_j^q\right)^{\frac{1}{p+q}}\right)$$

$$p \ and \ q \geq 0; p+q > 0, \sum_{t=1}^{t} |P_l| = n \ and \ P_i \cap P_j = \emptyset$$

Example 1.

Let set criteria such as $PHC = (PHC_1, PHC_2, PHC_3, PHC_4, PHC_5); p = q = 1$. The evaluation of these criteria is $d = (0.2,0.5,0.7,0.1,0.9)$. these criteria are divided into two categories such as:

$p_1 = (0.2,0.5,0.7) \ and \ p_2 = (0.1,0.9)$

$$PHMO_{p,q}(d_1, d_2 d_3, d_4, d_5) = \frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{|P_1|(|P_1|+1)}\sum_{i=1,j=1}^{|P_1|} d_i^1, d_j^1\right)^{0.5} + \\ \left(\frac{2}{|P_2|(|P_2|+1)}\sum_{i=1,j=1}^{|P_2|} d_i^1, d_j^1\right)^{0.5}\end{array}\right)$$

$$= \frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{3*(3+1)}(0.2*0.2+0.2*0.5+0.2*0.7+0.5*0.5+0.5*0.7+0.7*0.7)\right)^{0.5} + \\ \left(\frac{2}{2(2+1)}(0.1*0.9+0.1*0.1+0.9*0.9)\right)^{0.5}\end{array}\right)$$

$$= \frac{1}{2}\left(\frac{2}{12}*1.37\right)^{0.5} + \left(\frac{2}{6}*0.91\right)^{0.5} = 0.514299714$$

Example 2.

Let set criteria such as $PHC = (PHC_1, PHC_2, PHC_3, PHC_4, PHC_5); p = q = 1$. The evaluation of these criteria is $d = (0.2,0.3,0.9,0.5,0.6)$. these criteria are divided into two categories such as:

$p_1 = (0.2,0.3,0.9)\ and\ p_2 = (0.5,0.6)$

$$PHMO_{p,q}(d_1, d_2 d_3, d_4, d_5) = \frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{|P_1|(|P_1|+1)}\sum_{i=1,j=1}^{|P_1|} d_i^1, d_j^1\right)^{0.5} + \\ \left(\frac{2}{|P_2|(|P_2|+1)}\sum_{i=1,j=1}^{|P_2|} d_i^1, d_j^1\right)^{0.5}\end{array}\right)$$

$$= \frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{3*(3+1)}(0.2*0.2+0.2*0.3+0.2*0.9+0.3*0.3+0.3*0.9+0.9*0.9)\right)^{0.5} + \\ \left(\frac{2}{2(2+1)}(0.5*0.6+0.5*0.5+0.6*0.6)\right)^{0.5}\end{array}\right)$$

$$= \frac{1}{2}\left(\frac{2}{12}*0.491\right)^{0.5} + \left(\frac{2}{6}*0.550\right)^{0.5} = 0.521$$

Example 3.

Let set criteria such as $PHC = (PHC_1, PHC_2, PHC_3, PHC_4, PHC_5); p = q = 1$. The evaluation of these criteria is $d = (0.2,0.4,0.6,0.3,0.8)$. these criteria are divided into two categories such as:

$p_1 = (0.2,0.4,0.6)\ and\ p_2 = (0.3,0.8)$

$$PHMO_{p,q}(d_1,d_2d_3,d_4,d_5)=\frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{|P_1|(|P_1|+1)}\sum_{i=1,j=1}^{|P_1|}d_i^1,d_j^1\right)^{0.5}+\\ \left(\frac{2}{|P_2|(|P_2|+1)}\sum_{i=1,j=1}^{|P_2|}d_i^1,d_j^1\right)^{0.5}\end{array}\right)$$

$$=\frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{3*(3+1)}(0.2*0.2+0.2*0.4+0.2*0.6+0.4*0.4+0.4*0.6+0.6*0.6)\right)^{0.5}+\\ \left(\frac{2}{2(2+1)}(0.3*0.8+0.3*0.3+0.8*0.8)\right)^{0.5}\end{array}\right)$$

$$=\frac{1}{2}\left(\frac{2}{12}*0.408\right)^{0.5}+\left(\frac{2}{6}*0.568\right)^{0.5}=0.488$$

Example 4.

Let set criteria such as $PHC=(PHC_1,PHC_2,PHC_3,PHC_4,PHC_5);p=q=1$. The evaluation of these criteria is $d=(0.1,0.3,0.4,0.2,0.5)$. these criteria are divided into two categories such as:

$p_1=(0.1,0.3,0.4)\ and\ p_2=(0.2,0.5)$

$$PHMO_{p,q}(d_1,d_2d_3,d_4,d_5)=\frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{|P_1|(|P_1|+1)}\sum_{i=1,j=1}^{|P_1|}d_i^1,d_j^1\right)^{0.5}+\\ \left(\frac{2}{|P_2|(|P_2|+1)}\sum_{i=1,j=1}^{|P_2|}d_i^1,d_j^1\right)^{0.5}\end{array}\right)$$

$$=\frac{1}{2}\left(\begin{array}{c}\left(\frac{2}{3*(3+1)}(0.1*0.1+0.1*0.3+0.1*0.4+0.3*0.3+0.3*0.4+0.4*0.4)\right)^{0.5}+\\ \left(\frac{2}{2(2+1)}(0.2*0.5+0.2*0.2+0.5*0.5)\right)^{0.5}\end{array}\right)$$

$$=\frac{1}{2}\left(\frac{2}{12}*0.273\right)^{0.5}+\left(\frac{2}{6}*0.360\right)^{0.5}=0.317$$

2.2 SVNPHM

Definition 2.2.1

The SVNPHM can be defined as:

$$SVNPHM_{p,q}(d_1, d_2, \dots, d_n) = \frac{1}{t}\left(\sum_{l=1}^{t}\left(\frac{2}{|P_l|(|P_l|+1)}\sum_{i=1,j=1}^{|P_l|} d_i^p \oplus d_j^q\right)^{\frac{1}{p+q}}\right)$$

$$p, q > 0, p + q > 0, \sum_{l=1}^{t}|P_l| = n \ and \ P_i \cap P_j = \emptyset$$

Definition 2.2.2

The SVNPHM can be defined under the single valued neutrosophic set (SVNS) as:

$$SVNPHM_{p,q}(d_1, d_2, \dots, d_n) = \left(\begin{array}{c} \left(1 - \prod_{l=1}^{t}\left(1 - \prod_{i=1,j=1}^{|P_l|}\left(1 - T_i^p T_i^q\right)^{\frac{2}{|P_l|(|P_l|+1)}}\right)^{\frac{1}{p+q}}\right)^{\frac{1}{t}}, \\ \left(\prod_{l=1}^{t}\left(1 - \prod_{i=1,j=1}^{|P_l|}(1-(1-I_i)^p(1-I_i)^q)^{\frac{2}{|P_l|(|P_l|+1)}}\right)^{\frac{1}{p+q}}\right)^{\frac{1}{t}}, \\ \left(\prod_{l=1}^{t}\left(1 - \prod_{i=1,j=1}^{|P_l|}(1-(1-F_i)^p(1-F_i)^q)^{\frac{2}{|P_l|(|P_l|+1)}}\right)^{\frac{1}{p+q}}\right)^{\frac{1}{t}} \end{array}\right)$$

$d_i^p = \left(T_i^p, 1-(1-I_i)^p, 1-(1-F_i)^p\right)$ and $d_i^q = \left(T_i^q, 1-(1-I_i)^q, 1-(1-F_i)^q\right)$

$$d_i^p \otimes d_i^q = \left(\begin{array}{c} \left(T_i^p T_j^q\right), \\ \left(1-(1-I_i)^p\left(1-I_j\right)^q\right), \\ \left(1-(1-F_i)^p\left(1-F_j\right)^q\right) \end{array}\right)$$

$$\prod_{i=1,j=1}^{|P_l|} d_i^p \otimes d_i^q = \left(\begin{array}{c} \left(1 - \prod_{i=1,j=1}^{|P_l|}\left(1 - T_i^p T_i^q\right)\right), \\ \left(\prod_{i=1,j=1}^{|P_l|}(1-(1-I_i)^p(1-I_i)^q)\right), \\ \left(\prod_{i=1,j=1}^{|P_l|}(1-(1-F_i)^p(1-F_i)^q)\right) \end{array}\right)$$

3. Proposed Approach

Suppose a set of candidates such as $D = (D_1, D_2, \dots, D_n)$ and $C = (C_1, C_2, \dots, C_M)$ and set of criteria such as $PHC = (PHC_1, PHC_2, \dots, PHC_n)$. The evaluation criteria is H with single valued neutrosophic set (T_{ij}, I_{ij}, F_{ij}). The steps of the proposed approach are organized as follows:

Step 1. Three experts evaluate the criteria and alternatives using the single valued neutrosophic sets.

Step 2. Apply the score function to obtain crisp values.

$$S(D) = \frac{2 + T_{ij} - I_{ij} - F_{ij}}{3}$$

Step 3. Combine the crisp values.

Rank the alternatives.

4. Results Analysis

This section shows the results of Design Intelligence: Evaluating Quality in Digital Media Art Powered by Computational Tools. This study uses eight criteria and eight alternatives such as:

- Creative Expression
- Technical Execution
- Visual Aesthetics
- User Interaction & Engagement
- Functionality and Purpose Alignment
- Level of Automation/Intelligence in Tool Usage
- Accessibility and Inclusivity
- Sustainability of Digital Design Practices
- ✓ Generative Art Design using GANs
- ✓ 3D Animation Project with Blender and Python Scripting
- ✓ Augmented Reality Poster Design
- ✓ Web-Based Interactive Art Installation
- ✓ Data-Driven Infographic Design using Processing
- ✓ Mobile App Interface Design with Figma and AI Assistance
- ✓ Virtual Reality Experience for Museum Exhibition
- ✓ AI-Assisted Logo Design using Midjourney or DALL·E

Three experts evaluate the criteria and alternatives as shown in

$$D_1 =$$

$$< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.5,0.5,0.4 >$$

$$< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >< 0.4,0.6,0.5 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.2,0.9,0.6 >< 0.6,0.6,0.3 >$$

$$< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.1,0.9,0.6 >< 0.1,0.9,0.6 >< 0.4,0.6,0.5 >$$

$< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.1,0.9,0.6 >< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.5,0.5,0.4 >< 0.3,0.7,0.6 >$

$< 0.4,0.6,0.5 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.1,0.9,0.6 >< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >< 0.6,0.6,0.3 >< 0.9,0.1,0.2 >$

$< 0.4,0.6,0.5 >< 0.4,0.6,0.5 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >$

$< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.1,0.9,0.6 >< 0.9,0.1,0.2 >< 0.4,0.6,0.5 >< 0.6,0.6,0.3 >< 0.9,0.1,0.2 >< 0.1,0.9,0.6 >$

$< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >$

$$D_2 =$$

$< 0.6,0.6,0.3 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.5,0.5,0.4 >$

$< 0.5,0.5,0.4 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >< 0.6,0.6,0.3 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.6,0.6,0.3 >$

$< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.4,0.6,0.5 >$

$< 0.2,0.9,0.6 >< 0.5,0.5,0.4 >< 0.1,0.9,0.6 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.3,0.7,0.6 >$

$< 0.9,0.1,0.2 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.4,0.6,0.5 >$

$< 0.6,0.6,0.3 >< 0.6,0.6,0.3 >< 0.6,0.6,0.3 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.6,0.6,0.3 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >$

$< 0.9,0.1,0.2 >< 0.1,0.9,0.6 >< 0.9,0.1,0.2 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.1,0.9,0.6 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >$

$< 0.1,0.9,0.6 >< 0.1,0.9,0.6 >< 0.1,0.9,0.6 >< 0.4,0.6,0.5 >< 0.5,0.5,0.4 >< 0.1,0.9,0.6 >< 0.4,0.6,0.5 >< 0.4,0.6,0.5 >$

$$D_3 =$$

$< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.5,0.5,0.4 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.5,0.5,0.4 >$

$< 0.9,0.1,0.2 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >< 0.4,0.6,0.5 >< 0.6,0.6,0.3 >< 0.5,0.5,0.4 >< 0.2,0.9,0.6 >< 0.6,0.6,0.3 >$

$< 0.3,0.7,0.6 >< 0.2,0.9,0.6 >< 0.6,0.6,0.3 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.1,0.9,0.6 >< 0.9,0.1,0.2 >< 0.4,0.6,0.5 >$

$< 0.4,0.6,0.5 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.3,0.7,0.6 >< 0.3,0.7,0.6 >$

$< 0.6,0.6,0.3 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.4,0.6,0.5 >< 0.9,0.1,0.2 >$

$< 0.5,0.5,0.4 >< 0.4,0.6,0.5 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.3,0.7,0.6 >< 0.9,0.1,0.2 >< 0.6,0.6,0.3 >< 0.3,0.7,0.6 >$

$< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >< 0.2,0.9,0.6 >$

$< 0.9,0.1,0.2 >< 0.9,0.1,0.2 >< 0.9,0.1,0.2 >< 0.1,0.9,0.6 >< 0.2,0.9,0.6 >< 0.9,0.1,0.2 >< 0.2,0.9,0.6 >< 0.1,0.9,0.6 >$

The score function is applied to crisp values such as:

$$D_1 =$$

0.2333333330.20.5333333330.5666666670.4333333330.3333333330.8666666670.533333333

0.2333333330.8666666670.3333333330.4333333330.5666666670.5333333330.2333333330.566666667

0.20.5333333330.5666666670.4333333330.3333333330.20.20.433333333

0.5666666670.5333333330.20.2333333330.8666666670.2333333330.5333333330.333333333

0.4333333330.5666666670.5333333330.20.2333333330.8666666670.5666666670.866666667

0.4333333330.4333333330.5666666670.4333333330.8666666670.3333333330.4333333330.333333333

0.3333333330.8666666670.20.8666666670.4333333330.5666666670.8666666670.2

0.8666666670.2333333330.2333333330.2333333330.5666666670.5333333330.2333333330.866666667

$$D_2 =$$

0.5666666670.20.5333333330.5666666670.4333333330.3333333330.8666666670.533333333

0.5333333330.8666666670.3333333330.5666666670.5666666670.5333333330.5666666670.566666667

0.20.5333333330.5666666670.5333333330.5666666670.20.5333333330.433333333

0.2333333330.5333333330.20.20.5333333330.2333333330.20.333333333

0.8666666670.5666666670.5333333330.2333333330.20.8666666670.2333333330.433333333

0.5666666670.5666666670.5666666670.8666666670.2333333330.5666666670.8666666670.333333333

0.8666666670.20.8666666670.20.5333333330.20.20.533333333

0.20.20.20.4333333330.5333333330.20.4333333330.433333333

$$D_3 =$$

0.2333333330.20.5333333330.5666666670.4333333330.3333333330.8666666670.533333333

0.8666666670.8666666670.3333333330.4333333330.5666666670.5333333330.2333333330.566666667

0.3333333330.2333333330.5666666670.4333333330.3333333330.20.8666666670.433333333

0.4333333330.8666666670.2333333330.2333333330.2333333330.2333333330.3333333330.333333333

0.5666666670.3333333330.8666666670.2333333330.8666666670.2333333330.4333333330.866666667

0.5333333330.4333333330.3333333330.8666666670.3333333330.8666666670.5666666670.333333333

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0.8666666670.8666666670.8666666670.20.2333333330.8666666670.2333333330.2

The alternatives are ranked as 5, 8, 3, 1, 6, 7, 2, 4. Alternative 2 is the best and alternative 4 is the worst.

5. Conclusions

This study concluded that a crucial area in evaluating contemporary media art is design intelligence, which is the nexus of creative artistic expression and computational power. The use of a neutrosophic framework showed that, although technical accuracy and aesthetic appeal are essential, the perceived worth and usefulness of digital designs are greatly increased by the clever deployment of AI tools and alignment with communication objectives. Additionally, in terms of user involvement and long-term effect, initiatives that integrated sustainable and interactive techniques received higher scores. Robust quality evaluation techniques that consider both artistic expression and technological fluency are becoming increasingly necessary as computational design becomes more widely available and integrated into creative sectors. This study used the Single-Valued Neutrosophic Partitioned Heronian Mean Operator to overcome uncertainty information. To stay relevant in the rapidly changing digital design environment, our study helps close that gap and suggests that future design assessment models include adaptive, AI-driven criteria.

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