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Computational Aesthetics in Improving Regional Election Mascot Branding Using Hue Saturation Value Method

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ABSTRACT

The digital era has a visual appeal that plays a crucial role in strengthening identity and public involvement in political campaigns, particularly in the election of the regional head of Mataram City. The role of visual mascots is important in attracting public attention. Through the intensity of color in digital media, it can attract attention and persuade the public to like it, thus building trust in the branding of the Mataram city election. However, the deviation value from the dominant color intensity in the Mataram City election mascot on the computer screen remains unclear. The core issue lies in identifying the exact value of the color intensity in the mascot design, which serves as a digital aesthetic element in strengthening the branding identity of the Mataram City election. **This study aims** to analyze the color intensity of the mascot design as a reflective attraction in the regional political campaign in Mataram City. **The method used** is Hue, Saturation, Value (HSV), with cultural and psychological color analysis image processing techniques to attract public participation and perception. **The results of the study** indicate that the color intensity based on HSV segmentation increases. The average color Hue has a deviation of 0.0319, Saturation has a deviation of 0.0255, and Value has a deviation of 0.9409, all of which are attributed to the dominant color in the mascot design on the computer screen. The HSV color intensity in the design of the Mataram city election mascot, especially on the screen, has an average value that intersects with each other, resulting in unity and forming an aesthetically pleasing visual. In conclusion, the brightness of the dominant color is a crucial aspect of creating aesthetic elements that capture the audience's attention. **The implications** of the study's results serve as a basic reference for creating graphic designs using computer technology.

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1. INTRODUCTION

Mascots are a form of visual personification created through a design thinking process, serving as figures of festivity, identification, imagery, and symbols of luck [1]. A mascot is a person or animal that possesses human-like characteristics and is considered to bring good luck and represent the identity of an organization, product, sports team, or other entity [2]. The Mascot lander will provide in situ observations of the surface morphology, surface temperature, and magnetic field [3, 4]. Regional elections play a crucial role in building an attractive and easily recognizable visual identity for the community. Mascots serve as promotional media, but they also reflect the values of the candidate or party. Effective mascot design often relies on the designer's intuition; therefore, a more systematic approach is necessary to ensure optimal visual appeal. Effective mascot design has thus far relied heavily on the designer's intuition and subjective experience, resulting in inconsistent visual appeal and psychological impact. Although individual creativity plays an important role, the absence of a systematic approach can result in designs that are less than optimal in conveying branding messages or building emotional connections with target audiences. The most influential factor in audience attention in visuals is the design elements present in the mascot. The most reflective element in design is color. Color has a strong psychological impact in shaping public emotions and perceptions. Choosing the right color combination can increase memory, positive impressions, and emotional attachment of voters. However, the use of color can be inconsistent in terms of intensity on the computer, and even counterproductive to branding goals, as seen in the design of the Mataram city election mascot, which can result in a less aesthetically appealing outcome. However, the level of color intensity on the computer screen plays a role in building color harmony in the mascot design. Colors with strong intensity can create an interesting effect. According to Huchendorf, color affects human brain memory, finding that warm colors have a different appeal and are more easily remembered by the audience than cool colors [5]. Human memory is influenced by color. With the advancement of technology, computational approaches can be used to analyze aesthetic aspects. Techniques such as image processing and color space analysis allow for more accurate evaluations than purely subjective judgments. In this context, HSV (Hue, Saturation, Value) based methods can be an effective tool for measuring color balance and visual appeal.

HSV is a color model that separates hue, saturation, and value components, making it easier to analyze color properties in a structured way. Unlike the device-oriented RGB model, HSV is more suitable for assessing human perception of color. This makes it ideal for evaluating design aesthetics, including in the creation of the Mataram city election mascot. Perception is the result of the brain's work in understanding or assessing something that happens around it. Perception of color intensity in mascot design provides an interesting visual effect [6]. The visual beauty of color intensity is certainly produced by computer technology. The design of regional election mascots using a computer graphic technique approach conceptually must consider cultural factors, demographics, and local preferences. The colors used must be in harmony with regional identity while meeting the principles of attractive design [7, 8]. Previous research has rarely discussed the concept of color intensity in digital design. Computational analysis with HSV can help optimize color selection efficiently when creating graphic design work. Several studies have employed color analysis for aesthetic evaluation in various fields, including marketing and product design. However, not many have studied its application in the context of election branding, especially at the regional level: Research entitled "Scripting: Deep Histories of Computing, Graphics, and Media" written by Mingyi Yu discusses Computing is approached neither as software nor hardware, and beyond its scope as either science or technology. Through close readings of pivotal documents in the development of computing, each of the three chapters reconsiders a key concept in computational media and the keen attachments that have consolidated around them: (1) the sequential basis to algorithms; (2) the operative dimension in programming languages; and (3) the interactivity of computer screens [9]. The similarity of this research with the research conducted lies in the beauty produced on the computer. The research conducted differs in its focus on analyzing computer aesthetics, specifically the sharpness of color intensity in the digital design of the Mataram City Pilkada mascot, using the HSV method.

The study entitled "Deep Learning for Semantic Video Understanding" was written by Sourabh Kulhare. This study proposes methods to generate visual summaries of long videos and, in addition, presents techniques to annotate and generate textual summaries of the videos using recurrent neural networks. End-to-end video summarization heavily relies on the abstractive summarization of video descriptions. State-of-the-art neural language & attention joint models have been used to generate textual summaries. Interesting segments of a long video are extracted based on image quality, as well as cinematographic and consumer preferences [10]. The similarity of this study lies in the generation of visuals. However, the difference in the research conducted lies in the analysis of computer aesthetics, which focuses on color intensity in mascot designs using the HSV method. Research entitled "A computational model of aesthetic value" was written by AA Brielmann and P Dayan. This research examines the computer aesthetic model, which incorporates specific values in the resulting visuals. The similarity of this research with the one conducted is that both conduct computer aesthetic analysis [11]. However, the difference lies in the computer aesthetic analysis, which focuses on color intensity using the HSV method, in the design of the Mataram City Pilkada mascot. Research entitled "Computational Aesthetic Evaluation of Logos" by Jiajing Zhang et al. discusses a regression model of aesthetics that can predict human judgments on perceived aesthetics with a high correlation of 0.85. Our work provides a machine-learning-based reference framework for

quantitative aesthetic evaluation of graphic design patterns and research exploring the relationship between aesthetic perceptions of humans and computational evaluation of design principles extracted from graphic designs [12]. The similarity of this study with the one conducted lies in the analysis of computer aesthetics. But the difference lies in the focus of the analysis on the intensity of color in the mascot design displayed in computer media or mobile phone screens using the HSV method.

The research entitled "A Python Library for Computational Aesthetic Analysis of Visual Media in Social Science Research" by Yilang Peng discusses a case study that applies Athec to compare the visual aesthetics of Instagram posts from the two candidates in the 2016 U.S. presidential election, Hillary Clinton and Donald Trump, indicating how amateurishness and authenticity are reflected in politicians' visual messages. With computational aesthetic analysis tools, communication researchers can better understand the antecedents and outcomes of visual aesthetics beyond visual media content [13]. The similarity of this study with the one conducted lies in the computer aesthetic analysis of visual media. However, **the difference** lies in the visual intensity of the color in the mascot design, which can influence the branding of the Mataram city election using the HSV method. Previous studies have shown that computational color analysis can improve graphic design quality. However, its application in the context of political branding, particularly in the form of election mascots, remains limited. By combining traditional design principles with computational methods, this study seeks to develop a novel, more quantifiable approach to mascot design. This research attempts to fill this **gap** by focusing on mascots as a key element of visual campaigns.

Strong visual branding can influence the electability of a candidate or party. A well-designed mascot can reinforce a campaign message and differentiate itself from competitors. HSV analysis can help ensure that the colors chosen are not only aesthetically pleasing but also strategically effective, thereby supporting the goals of political communication. This study aims to analyze the computer aesthetics of the Mataram city election mascot design, which has an impact on the branding algorithm. The results of this study can be the basis for the development of design tools that utilize HSV analysis for automatic color recommendations. Thus, campaign creative teams can make more informed color choices, reduce trial and error, and speed up the mascot production process. The findings of this study are expected to provide practical guidance for political practitioners and designers in creating effective mascots. This computationally based approach not only enhances design quality but also facilitates a more targeted visual communication strategy, thereby strengthening voter engagement.

2. RESEARCH METHOD

The HSV method provides a systematic and computational approach to analyzing color aesthetics in digital design, as shown in Figure 1. Utilizing hue, saturation, and value components, designers can make more measured decisions in creating mascots or other visual elements that are attractive, harmonious, and psychologically effective. The HSV color model has a natural color based on the idea of tint, saturation, and tone [14]. Its application in the field of election branding can increase visual engagement while ensuring the consistency of campaign identity. The HSV (Hue, Saturation, Value) color model has emerged as one of the most insightful approaches to analyzing and manipulating color because its structure closely matches the way humans perceive color. HSV allows designers to think about color in terms of hue, purity (or saturation), and brightness (or value), three aspects that directly affect the visual appeal and psychological impact of a design. HSV color analysis is performed using image processing techniques [15].

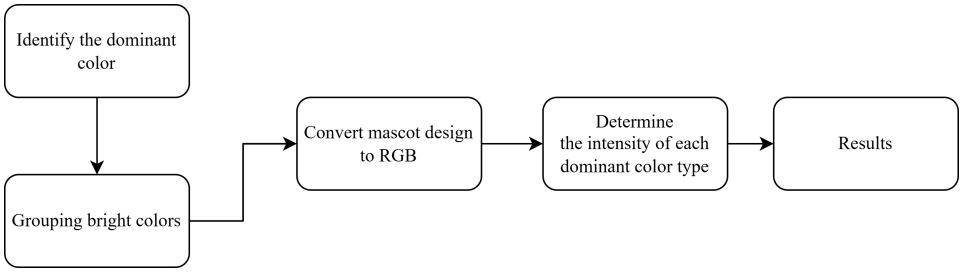

Figure 1. Stages of Color Intensity Analysis in Branding the Mataram City Regional Elections [15]

The first step in HSV analysis is to convert the image from the commonly used RGB format into the HSV color space. This conversion process involves mathematical calculations that transform the color representation based on mixing red, green, and blue light into a representation that is more consistent with human perception. This conversion is important because it allows for a more natural and intuitive color analysis. The hue component in HSV represents the type or hue of a color, measured in degrees (0° to 360°) on the color wheel. In mascot design analysis, extracting the hue distribution provides an overview of the color palette used.

Further analysis can examine the distribution of hues to determine whether the design employs a monochromatic, analogous, or complementary color scheme - each of which has a distinct psychological impact on the viewer. High-saturation designs tend to be more energetic and attention-grabbing, making them suitable for a younger target audience or an upbeat message. Low-saturation designs convey a more elegant and professional impression, perhaps more suitable for a more mature target audience. Good value distribution should consider the principle of contrast to create focal points and guide the viewer's eye to important areas in the design. Values that are too homogeneous can make the design look flat, while extreme variations may look disharmonious. The real power of HSV analysis lies in the ability to integrate all three components together. By considering the interaction between hue, saturation, and value, the brightness reflected by the lumen strength generated from computer technology can be approached. Through this analysis, software is needed to analyze the dominant color intensity of an image or design, measuring the level of color brightness. Color is the most important thing that reflects on human visual senses, providing an emotional branding effect through design.

3. RESULT AND ANALYSIS

The findings of this study suggest that achieving the right HSV balance can enhance audience engagement, readability, and emotional impact. Both in terms of color intensity, shape, and the theme it represents. The mascot for the 2024 Mataram City regional elections features high color intensity, despite the visuals using more cool colors. The mascot for the 2024 Mataram City regional elections is characterized by bold and strong colors, creating a dynamic yet harmonious impression. For the mascot design, dark blue and turquoise are the most prominent. Dark blue symbolizes stability and trust, while turquoise provides a fresh and vital touch, which aligns with the spirit of development in Mataram City. Although using attractive colors, the chosen combination does not seem monotonous due to the contrasting color variations. One example is the combination of navy blue and turquoise, which gives a modern and progressive impression. White and silver are also used to balance and make the mascot more visible. This design showcases the balance between the spirit of innovation and the seriousness of politics that we aim to convey in the 2024 regional elections.

The Mataram City Mascot Design 2024 was deliberately designed with a color balance that affects the branding algorithm in human memory, combining serious and innovative impressions simultaneously. The dominant blue and green colors of Tosca not only create a strong visual contrast but also use the principles of color psychology. Color can shape the audience's interpretation of the goals, values, and messages you want to convey [16]. Blue conveys trust and stability, and green produces a relationship between growth and renewal. This combination is in the subliminality of the audience's time and forms the perception that Mataram's political process is not only carried out with integrity but also filled with a spirit of renewal [17]. Neuromarketing research suggests that high-intensity cool colors are more memorable because they activate areas of the brain associated with knowledge and positive emotions. This mascot is not only a visual symbol but also a branding tool that reinforces the "political but progressive" narrative in people's minds, ensuring that the 2024 election message will be subtle yet enduring. The results of the Mataram City Pilkada Mascot design can be seen in Figure 2.

Figure 2. Mataram City Pilkada Mascot

The results of identifying the colors in the design of the 2024 Mataram City regional election mascot. These colors form the backbone of branding in every design, whether displayed in print or digitally. The important role of color in various aspects of human

life, from marketing and branding to visualizing information through visual media [18]. The impact of color applied through visual communication design work can influence people's knowledge and emotions towards the message conveyed. The 2024 Mataram City regional election mascot was carefully designed, including the selection of colors that use the RGB (Red, Green, Blue) system to ensure visual consistency across media (see Figure 3). The RGB color conversion process for this mascot is crucial to ensure accurate color display, both in digital and print forms. By converting RGB values to other formats, the design team ensures that the mascot colors remain vibrant and in accordance with the cultural identity and spirit of Mataram City. Additionally, this conversion helps maintain color uniformity across all campaign materials, from banners and posters to social media content, ensuring the public can easily recognize the image of the 2024 regional election mascot. The analysis of the average HSV color intensity values is presented in Table 1.

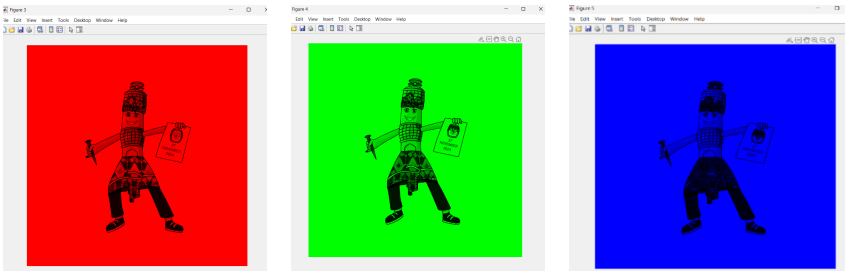

Figure 3. Convert to RGB Warrants on the Mataram City Pilkada Mascot

Table 1. Analysis of the Average Value of HSV Color Intensity

HSV Component	Average	Standard Deviation
Hue	0.0319	0.1285
Saturation	0.0255	0.1122
Value	0.9409	0.1835

3.1. Hue Color

Hue is a fundamental attribute of color, playing a crucial role in visual perception. Hue is a color pattern with a range of values 0-360 degrees (see Figure 4) [19]. Hue has been the subject of extensive research in various forms, including psychology, art, and design. The hue of the color in the Mataram city election mascot refers to the dominant wavelength of light that produces a color. It has been demonstrated to elicit diverse emotional and psychological responses in individuals, influencing their preferences, decision-making processes, and overall behavior. Hue value is the angle of that color on the color wheel. Red starts at 0 degrees, and the other colors follow at 360 degrees. It is measured in degrees, ranging from 0° to 360°. Color has a profound psychological and memory impact; choosing the right color paper for branding is both strategic and aesthetic. Branding algorithms refer to the way the brain processes colors with certain values, storage, and combinations. Mataram 2024: The election's mascot, dominated by dark blue and Tosca Green, works systematically. Blue enhances the recognition of reliability and stability (essential for the structure of political trust), while Tosca Green innovation and sustainability (reflecting a vision of progressive development). This combination creates a clear color code that is embedded in the memory of the target group, similar to the method of digital algorithm classification data.

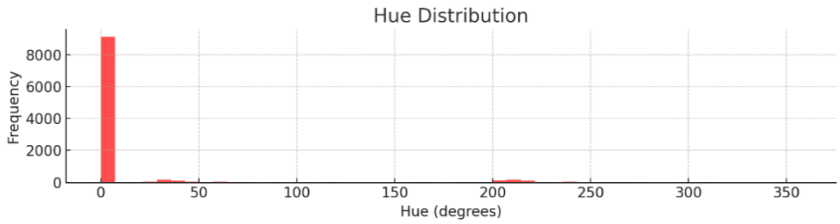

Figure 4. Hue Color Intensity Graph in the Mataram City Election Mascot

The graph shows a dominance of colors in the low hue range (around 0–0.1), indicating an abundance of colors such as red, orange, and brown. This is consistent with the colors of the traditional woven cloth worn by the mascot. This effect is reinforced by the theory of emotional in neurosales, where brain preservation is easy with emotional resonance visual stimuli [20]. High-intensity cool colors, such as the Mataram mascot trend, are perceived by the brain as professional yet dynamic. Political messages are not only seen, but they also remind us of themselves. Branding can be used as a social and communication technology for managing consumer behaviour and offering the following algorithm [21]. Therefore, the color algorithm in Wahlbranding 2024 acts as recognition software. This forms a wordless story while ensuring identity consistency across all media campaigns.

The selection of hue colors for the 2024 Mataram City regional election mascot plays a crucial role in building a strong and memorable visual identity. Hue, as the main component in the color wheel, determines the basic shades (such as red, blue, or green) that form the psychological foundation of public perception. The branding algorithm, hue, is used to create color harmony through techniques such as complementary or analogous schemes, so that the mascot looks dynamic but remains in harmony with the values of local wisdom of Mataram [22]. The use of the proud green hue of Lombok Island can be combined with traditional Sasak colors, strengthening the message of sustainability and cultural wisdom. The image processing algorithm also ensures hue consistency across platforms, avoiding color distortion that can weaken brand recall. The mascot is not only visually appealing but also becomes a symbol that is easily recognized and associated with the vision of the Mataram City General Election Commission.

3.2. Saturation

The saturation level (strength or purity of color) in the design of the 2024 Mataram City Pilkada mascot shows the use of colors that tend to be bright and lively (see Figure 5). Colors have low to medium saturation, indicating the presence of soft or neutral colors, such as gray and white, on the mascot's body, as well as on the clothing. High saturation creates an energetic and enthusiastic impression. Saturation also showed a significant influence on arousal [23]. **This aligns** with the purpose of the mascot as a symbol of the dynamism and enthusiasm of the Mataram people in welcoming the democratic party. Colors with high saturation are also easy to attract attention, making them effective for use in campaign media. A combination of colors with medium to low saturation, such as light blue and brown, serves to balance the impression of being too striking. These colors provide a calmer and more elegant feel, representing local wisdom and stability [24]. The use of this saturation gradation demonstrates careful consideration in creating visual harmony, while reflecting the diversity of the Mataram community's characters, which is dynamic yet rooted in culture. Overall, the choice of saturation level in the 2024 Mataram regional election mascot successfully combines the message of the spirit of change and cultural stability. Bright colors dominate to convey positive energy, while more muted colors act as a balance. The use of identity politics in Indonesia has become more prevalent in recent years, leading up to elections [25]. This approach is not only visually appealing but also strengthens local identity and inclusive political goals, allowing the mascot to be accepted by various groups in society.

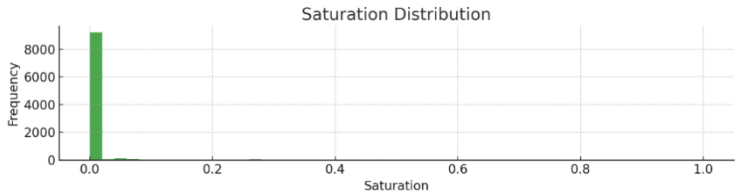

Figure 5. Saturation Color Intensity Graph in the Mataram City Election Mascot

Color saturation gives a soft impression on the design of the Mataram city election mascot. The influence of soft colors always gives the impression that affects the audience's memory. The branding algorithm is indirectly able to influence the appeal through the influence of color [26]. The intensity of the color saturation gives a positive impression to the audience's awareness of approaching the polling station. Audience psychology plays a role in influencing the perception of color identity, icons, and symbols associated with the Sasak culture. Audience psychology plays a crucial role in determining the effectiveness of the 2024 Mataram City regional election mascot design, particularly through the influence of color identity, icons, and symbols associated with Sasak culture. The colors chosen, such as red and yellow with high saturation, not only attract visual attention but also evoke an emotional response [27]. In the context of Sasak culture, these colors also have traditional meanings, such as red, which is often associated with Lombok weaving and traditional ceremonies, thereby facilitating the formation of emotional bonds with the local community. The use of colors that align with the psychology of audience perception enhances the mascot's memory and identity as a cultural representation.

3.3. Value

The design of the 2024 Mataram City regional election mascot is characterized by high-value colors, such as white on the mascot's body and a clean background, which creates a bright, clear, and easily recognizable visual impression. The white color that dominates the mascot's body not only gives a clean and modern impression, but also symbolizes neutrality, openness, and transparency values that are in line with the spirit of democracy [28]. The use of high-value colors also increases the visibility of the mascot, ensuring that it remains prominent in various campaign media, both digital and print (see Figure 6). In addition, the contrast between the bright colors on the mascot and the more colorful supporting elements creates a balanced yet dynamic composition.

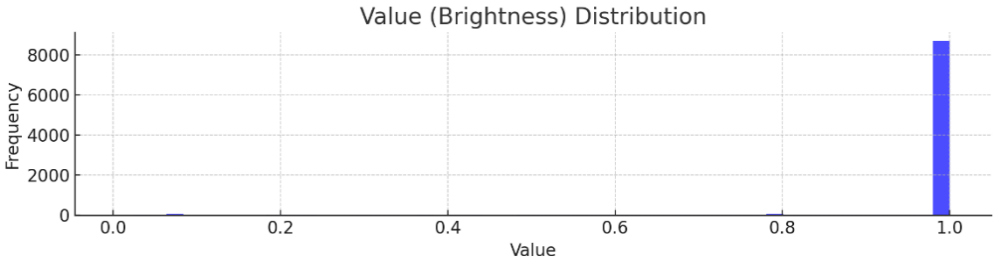

Figure 6. Value Color Intensity Graph in the Mataram City Election Mascot

Dominated by bright and clean colors, it also reinforces the message of simplicity and professionalism, while allowing the Sasak cultural elements to stand out more. High value palettes such as white, light yellow, or pastel are often associated with optimism, clarity of thought, and quality innovation that are intended to be presented in the political process in Mataram [29]. The dominance of bright colors also reflects the geographical characteristics of Mataram City, which is renowned for its vibrant nature, as well as a strong symbol of Sasak culture, shaping the city's identity. Consequently, the mascot design is not only visually communicative but also resonates with the local identity. The high-value colors in the 2024 Mataram regional election mascot design demonstrate a deep consideration of both functional and psychological aspects. Bright colors not only ensure the design is memorable and eye-catching but also convey a positive message about transparency, progress, and local wisdom [30]. This approach strengthens inclusive and aspirational political branding while ensuring the mascot can reach a wide audience with a professional and pleasant impression.

Computer aesthetics that regulates the brightness of colors in design becomes a centralized attention director and can provide a strong impression for the audience. It has been applied to aesthetic quality assessment of visual art images, which can automatically learn effective aesthetic features with successful attempts and promising results [31, 32]. The power of color intensity in design can provide reinforcement to the audience's memory, allowing it to create a strong impression that is embedded in the audience's mind. The branding algorithm for the Mataram City Pilkada mascot has a strong influence in strengthening the identity value of the mascot. The branding algorithm fosters a visual habit, ensuring the audience consistently remembers a design that visually conveys the message it represents. Computers, through their monitor screens, provide brightness using lumen technology that enhances color harmony or color intensity. Computer aesthetics refers to the human perception of the principles of graphic design. From an aesthetic point of view, it can be justified. Still, in depth, the world of design cannot be separated from the influence of computer graphics technology, which involves graphic cards, allowing for the creation of color intensity on the screen. Digital design provides an aesthetic and memorable effect, shaping the audience's visual sensory behavior habits and thereby forming a branding algorithm through the design. The intensity of color in the mascot design influences users to perceive the design, ensuring that the mascot design remains in the human mind.

4. CONCLUSION

The application of the computational aesthetic approach, based on the HSV (Hue, Saturation, Value) color model, in the development of a regional election mascot branding algorithm demonstrates significant potential in enhancing the visual quality and effectiveness of symbolic communication. Through computational analysis of color composition, this study identified and optimized dominant colors, such as red, orange, and brown, which have a strong psychological and cultural influence on audience perception. These colors were not only chosen based on aesthetics but also contextualized to the local values of the multicultural and traditional Mataram City. The developed algorithm not only produces a visually appealing mascot design but also builds emotional and cultural

connections with the voting public. The integration of computational aesthetics through HSV is a strategic approach in strengthening the visual identity and reach of the regional election mascot as an effective political communication instrument.

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This research is based on the numerous doubts expressed by the public, particularly designers of the visual mascot for the Mataram city election. The research was conducted to analyze the influence of computer aesthetics on the digital design of the 2024 Mataram election mascot, specifically in terms of HSV color harmony, which can form a branding algorithm. This research cannot be separated from the assistance of related parties, namely Mr. Edy Putrawan, Chairman of the Mataram KPU, Lalu Herry Budyanto, a branding expert, and Arianto, a character design expert. Therefore, with the help of this research, I would like to express my gratitude.

REFERENCES

[1] P. Kusuma *et al.*, "Maskot Kota Yogyakarta," *Mudra Jurnal Seni Budaya*, vol. 35, no. 2, pp. 250–255, Jul. 2020. DOI: 10.31091/mudra.v35i2.1052.

[2] F. L. Kurniawan and S. Sayatman, "Perancangan Maskot untuk Memperkuat Identitas Visual Kota Kediri," *Jurnal Sains dan Seni ITS*, vol. 7, no. 1, pp. 48–52, Apr. 2018. DOI: 10.12962/j23373520.v7i1.29547.

[3] D. Herčík *et al.*, "The MASCOT Magnetometer," *Space Science Reviews*, vol. 208, no. 1-4, pp. 433–449, Jul. 2017. DOI: 10.1007/s11214-016-0236-5.

[4] S. A. Fryberg *et al.*, "Unpacking the Mascot Debate: Native American Identification Predicts Opposition to Native Mascots," *Social Psychological and Personality Science*, vol. 12, no. 1, pp. 3–13, Jan. 2021. DOI: 10.1177/1948550619898556.

[5] M. G. Hartadi, I. W. Swandi, and I. W. Mudra, "Warna dan Prinsip Desain User Interface (UI) dalam Aplikasi Seluler "Bukaloka"," *Jurnal Dimensi DKV Seni Rupa dan Desain*, vol. 5, no. 1, pp. 105–119, Apr. 2020. DOI: 10.25105/jdd.v5i1.6865.

[6] M. E. N. Sumarandak, A. E. Tungka, and P. P. Egam, "Persepsi Masyarakat terhadap Kawasan Monumen di Manado," *Spasial*, vol. 8, no. 2, pp. 255–268, 2021. DOI: 10.35793/sp.v8i2.34689.

[7] V. Barradas *et al.*, "Colour as a Distinctive Element of the Territories," in *13th International Conference on Applied Human Factors and Ergonomics (AHFE 2022)*, 2022. DOI: 10.54941/ahfe1001381.

[8] S. Li, "Research on the Application Strategy of Miao Pattern in Packaging Design under the Background of Cultural and Tourism Integration," *Art and Design Review*, vol. 11, no. 04, pp. 308–319, 2023. DOI: 10.4236/adr.2023.114023.

[9] M. Yu, "Scripting: Deep Histories of Computing, Graphics, and Media," Ph.D. dissertation, Harvard University Graduate School of Arts and Sciences, Cambridge, 2023.

[10] S. Kulhare, "Deep Learning for Semantic Video Understanding," Thesis, Rochester Institute of Technology, May 2017.

[11] A. A. Brielmann and P. Dayan, "A computational model of aesthetic value," *Psychological Review*, vol. 129, no. 6, pp. 1319–1337, 2022. DOI: 10.1037/rev0000337.

[12] J. Zhang *et al.*, "Computational Aesthetic Evaluation of Logos," *ACM Transactions on Applied Perception*, vol. 14, no. 3, pp. 1–21, Jul. 2017. DOI: 10.1145/3058982.

[13] Y. Peng, "Athec: A Python Library for Computational Aesthetic Analysis of Visual Media in Social Science Research," *Computational Communication Research (old website)*, vol. 4, no. 1, pp. 323–349, May 2022.

[14] H. Razalli, R. Ramli, and M. H. Alkawaz, "Emergency Vehicle Recognition and Classification Method Using HSV Color Segmentation," in *2020 16th IEEE International Colloquium on Signal Processing & Its Applications (CSPA)*, Langkawi, Malaysia: IEEE, Feb. 2020, pp. 284–289. DOI: 10.1109/CSPA48992.2020.9068695.

[15] A. K. Panggabean, A. Syahfaridzah, and N. A. Ardiningih, "Mendeteksi Objek Berdasarkan Warna dengan Segmentasi Warna HSV Menggunakan Aplikasi MATLAB," *METHOMIKA Jurnal Manajemen Informatika dan Komputerisasi Akuntansi*, vol. 4, no. 2, pp. 94–97, Oct. 2021. DOI: 10.46880/jmika.Vol4No2.pp94-97.

[16] J. Y. Cho and J. Suh, "Spatial Color Efficacy in Perceived Luxury and Preference to Stay: An Eye-Tracking Study of Retail Interior Environment," *Frontiers in Psychology*, vol. 11, p. 296, Mar. 2020. DOI: 10.3389/fpsyg.2020.00296.

[17] S. Borovac Zekan and I. Zekan, "Subliminal Messages in Advertising: Do They Really Work?" *DIEM: Dubrovnik International Economic Meeting*, vol. 7, no. 1, pp. 102–113, Feb. 2022. DOI: 10.17818/DIEM/2022/1.11.

[18] T. J. Madden, K. Hewett, and M. S. Roth, "Managing Images in Different Cultures: A Cross-National Study of Color Meanings and Preferences," *Journal of International Marketing*, vol. 8, no. 4, pp. 90–107, Dec. 2000. DOI: 10.1509/jimk.8.4.90.19795.

[19] A. S. Putri, G. E. Setyawan, and T. Tibyani, "Sistem Deteksi Warna pada Quadcopter Ar.Drone Menggunakan Metode Color Filtering Hue Saturation and Value (HSV)," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 2, no. 9, pp. 3202–3207, Jan. 2018.

[20] Z. Wang and Q. Wang, "Research on the Influencing Factors and Common Laws of Emotional Resonance in Visual Art Design," *Pakistan Journal of Life and Social Sciences (PJLSS)*, vol. 22, no. 2, 2024. DOI: 10.57239/PJLSS-2024-22.2.0065.

[21] N. I. Zykun *et al.*, "Branding as a social communication technology for managing consumer behavior," *International Journal of Management (IJM)*, vol. 11, no. 6, pp. 1027–1037, 2020. DOI: 10.34218/IJM.11.6.2020.091.

[22] T. Studzieniecki and I. Urbanyi, "Development of Trade Relations Between Central Europe and Scandinavia as a Determinant Creating Polish Ferry Shipping Market," in *32nd International Scientific Conference on Economic and Social Development*, Odessa, Jun. 2018.

[23] L. Wilms and D. Oberfeld, "Color and emotion: Effects of hue, saturation, and brightness," *Psychological Research*, vol. 82, no. 5, pp. 896–914, Sep. 2018. DOI: 10.1007/s00426-017-0880-8.

[24] D. Jonauskaite *et al.*, "Universal Patterns in Color-Emotion Associations Are Further Shaped by Linguistic and Geographic Proximity," *Psychological Science*, vol. 31, no. 10, pp. 1245–1260, Oct. 2020. DOI: 10.1177/0956797620948810.

[25] H. Asfia, "Synergy of Inclusive Groups as An Effort to Resolve Identity Politics in Elections," *Jurnal Ilmu Hukum Tambun Bungai*, vol. 8, no. 1, pp. 260–270, 2023.

[26] R. Srinivasan and G. Sarial-Abi, "When Algorithms Fail: Consumers' Responses to Brand Harm Crises Caused by Algorithm Errors," *Journal of Marketing*, vol. 85, no. 5, pp. 74–91, Sep. 2021. DOI: 10.1177/0022242921997082.

[27] J. Bayer *et al.*, "Facebook in context(s): Measuring emotional responses across time and space," *New Media & Society*, vol. 20, no. 3, pp. 1047–1067, Mar. 2018. DOI: 10.1177/1461444816681522.

[28] T. Mogea and S. R. Joshua, "The Spirit of Democracy as Seen in Walt Whitman's "I Hear America Singing"," *Jurnal Pendidikan dan Sastra Inggris*, vol. 2, no. 3, pp. 55–65, Nov. 2022. DOI: 10.55606/jupensi.v2i3.659.

[29] E. Sørensen, "Political innovations: Innovations in political institutions, processes and outputs," *Public Management Review*, vol. 19, no. 1, pp. 1–19, Jan. 2017. DOI: 10.1080/14719037.2016.1200661.

[30] S. Yasushi, K. Naoko, and M. Yoshihiro, "Appropriate color codes for medical materials and devices in terms of color vision deficiency management to ensure patient safety," *Journal of Osaka Dental University*, vol. 51, no. 1, pp. 31–38, 2017. DOI: 10.18905/jodu.51.1_31.

[31] J. Zhang, Y. Miao, and J. Yu, "A Comprehensive Survey on Computational Aesthetic Evaluation of Visual Art Images: Metrics and Challenges," *IEEE Access*, vol. 9, pp. 77 164–77 187, 2021. DOI: 10.1109/ACCESS.2021.3083075.

[32] W. Menninghaus *et al.*, "What are aesthetic emotions?" *Psychological Review*, vol. 126, no. 2, pp. 171–195, Mar. 2019. DOI: 10.1037/rev0000135.

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