# Exploring the Relationship Between Oil Painting Technology Teaching and the Improvement of Visual Perception Ability

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Abstract: Visual perception is an important element in the creative arts industry as it is a pillar of the feedback loop that informs artists on the audiences' response to paintings. This vitality prompts the examination of the relationships between oil painting technology teaching and visual perception abilities. At all times, the audience should have a true positive or negative visual perception of oil paintings to match the realities of the designs, paintworks and other critical features of the artworks. In this research, the relationship between audiences' visual perceptual abilities and oil painting was examined in a mixed methodology: qualitative and quantitative data was analyzed to established underlying mechanisms of positive and negative visual perceptions developed upon visual encounters with artworks. Secondary data obtained from electronic databases analyzed and visualized using the Python programming language in Anaconda's integrated development environment. A preliminary analysis of the data revealed a multidimensional relationship between oil painting technology teaching and visual perception abilities. The conclusive revelation was that the audience may develop a positive or negative visual perception on oil paints based on the rendition, color, texture and overall organization of the paintworks. The separation of nonimportant from important elements of the paintworks, including aesthetics, stylization, integration of technology and composition of are the foundations of the improved visual perception abilities.

Keywords: Oil Painting Technology, Visual Perception, Teaching, Research Paper, Vision, and Creative Arts

# 1. INTRODUCTION

The fusion of advanced and contemporary oil painting in art marked the beginning of an era in the consumption of artworks and visual perceptions. Today, industry leaders have demonstrated that teaching oil painting technologies enable artists exploit audiences' interpretative and cognitive capabilities to comprehend the various forms of artistic expressions and

scope of creative work (Song, 2023). The game changing technology has successfully enhanced visual perceptual abilities, expanding the audiences' ability to appreciate reminiscent colors, vibrancy and other elements of creativity in the modern artworks (Mostert, 2022). In the recent years, oil painting technology teachings has been appreciated in the field of art as an innovative thinking and a diversified approach to practice. In light of this concept, improved visual perception has been a product of integrating talents and innovation, and creativity (Gao, 2021). This has led to increased incorporation of oil painting lessons and syllabus in most universities and colleges offering creative arts courses. Expanding training, research and knowledge in the field of creative arts and oil painting technology revolutionizes the noble profession and open endless opportunities. Visual perceptions play crucial roles in the recreation and presentation of perceived experiences and objects. Previous studies report that visually appealing oil paintings sharpen human visual perceptions and abilities upon repeated exposure. Theoretical frameworks indicate that oil paintings exploit visually appealing approaches and designs to attract audiences' attention. To achieve this, color is one of the main painting qualities as it transmitted via emotions. Oil painters use color to confer a warm feeling among the audience, subjecting them to accommodative and friendly mood while consuming artworks (Cheung et al., 2019). Additionally, intrinsic qualities of the oil paintings, in combination cognitive capabilities like memory capacity, facilitate the processing of complex images. For example, Color has been floated as the significant bridge between oil painting technology and visual perception abilities (Long & Chen, 2023; Yao et al., 2022). Visual perception abilities hinge on psychological factors. Of great importance are psychological factors commanding observation skills and processing the processing of conspicuous colors of the paintings. Visual perception is an important element in creative arts industry as it is the key seller of artistic products and trigger of either appreciation or rejection. Much has been done to draw a clear importance of oil painting and the ability to draw the audiences' attention to appreciate the cutting-edge technology (Pelowski et al., 2017). The stumbling block to converting a large base of audience to consumers of oil paintings is visual perception, poking holes in the role and relationships of individuals' ability to visually perceive paintworks. More so, the role of oil painting technology in visual perception abilities has attracted much attention from scholars in the recent years. The exploitation of neurophysiological and emotional facets of stimuli response has been attributed to this relationship. Many authors have reported that artists' ability to paint images and pictures that trigger positive

emotional response have succeeded in improving visual perceptions. At the same time, other scholars have reported contradictory schools of thought: higher visual perceptions provoked by aesthetic oil paints trigger positive emotional response. In the wake of the contentious reports and positions, a thorough examination of oil paint technologies and visual perceptions is necessary for deeper insights (Geng et al., 2022). Today, the relationships between oil painting technology and enhanced visual perceptual abilities is underappreciated and underexplored in literature. Oil painting is a vast concept, with important facts, evidence and knowledge remaining inaccessible to many people. A critique of the evidence shows that this relationship is less understood due to insufficient or irrelevant findings and reports in the recent investigations. Thus, an exploration of the link between oil painting technology teaching and resulting effects on visual perception abilities is vital for the creative arts industry. An understanding of this relationship is ideal for expanding the consumption of oil paintings and creativity and creating exceptional paintings.

# 2. RATIONALE AND MAIN OBJECTIVE

Teaching oil painting is a new development in art and the importance and implication is far-reaching through the massive transformations of the industry. However, the complex and intertwined aspects of the industry call for an in-depth understanding of the relationships and rationale of visual perception abilities and oil painting technologies. Thus, the main objective of this research paper is to examine the relationships between oil painting technology teaching and visual perception abilities in a multidimensional way touching on the audience, artists, stakeholders and other key players in the art industry. The findings will inform the role of oil painting technology and teaching in shaping the industry through aesthetics and consumptions through improved perceptions. This will be impactful in policy formulation and creativity advancements in the arts industry, owing to technological advancements and involvement in improving arts.

## 3. METHODS

# 3.1 Research Design

A mixed methodology research design was employed in this study. This methodology focused on obtaining qualitative and quantitative data on vison perceptual abilities and the oil painting technology teachings in order to establish the relationships therein. The data was collected from secondary sources, mainly level one evidence articles, analyzed and visualized to enhance an understanding of the themes under the topic.

# 3.2 Data Collection

The qualitative and quantitative data was collected from level one evidence articles obtained from the electronic databases: Google Scholar, PubMed, and ProQuest. The qualitative data obtained from the articles included the thematic relationships between oil painting technology teachings and the landscape of visual perceptions among participants. The thematic findings informed and explained the nature or dimensions of the above-stated relationships. On the other hand, the statistical findings were recorded on a excel sheet and cleaned for analyses. Statistics on relevant aspects of oil painting and visual perception was recorded and succinctly indicated for precision.



**Figure 1**: (a) Traditional Oil Painting of a Young Girl in Ancient Chinese Attire, (b) Cherry Blossoms Set Against a Misty Landscape, (c) The Great Wall of China Amidst Lush Surroundings, and (d) A Vibrant Landscape Inspired by the Style of Vincent Van Gogh.

# 3.2 Data Analysis

All the statistical analyses and visualization were performed using the 3.10 on the Anaconda integrated development environment. The statistical analyses used on the unique data depended on the nature of the data, and was focused on generating statistical meanings through percentages, age groups, mean scores among other metrics. The visualizations were based on the resultant statistical calculations of the raw data.

# 3.3 Results

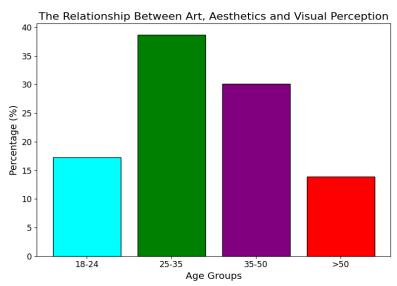


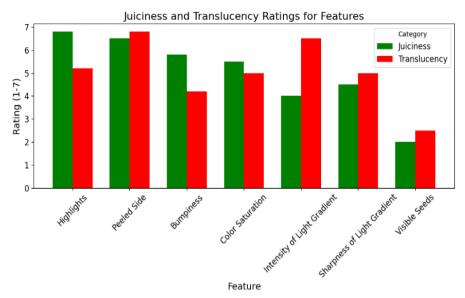
Figure 2: The Relationship Between Art, Aesthetics and Visual Perception

In Figure 2, the percentages of participants in each age group reporting the idiosyncratic patterns of enjoyment of aesthetic patterns of artworks is represented as follows: 17.3% age group 18-24 years, 38.7% in the age group 25–35 years, 30.1% in the age group 35–50 years, and 13.9%:>50. This data substantially represents a discrete judgement of the relationship between art, aesthetics and visual perception among persons aged 25-35 years through to >50-year-olds, reflecting the overall aesthetic experience. However, the dissimilar scores are attributed to individuality and other factors that might not be common across a study group.

Table 1: Thematic Aspects of Oil Painting Technology Teaching and Visual Perception Abilities

| Theme               | Relationships In Art,            | Example                   |
|---------------------|----------------------------------|---------------------------|
|                     | Aesthetics and Visual            |                           |
|                     | Perception                       |                           |
| Aesthetics and      | The influence of aesthetic oil   | Visually appealing oil    |
| Visual Perception   | paintings on response and        | paintings                 |
| Abilities           | interpretation to visual stimuli |                           |
| Aesthetics and Oil- | Expressing and exploring         | Renaissance oil paintings |
| Painted Artworks    | beauty through oil paintings     | embodying proportion and  |
|                     |                                  | harmony like Mona Lisa    |

Identified as a multidimensional theme in Table 1, aesthetics emerges as the key theme defining the relationships between oil painting technology teaching and visual perception abilities. This technology is seamlessly and deliberately used to trigger response and interpretation of visual stimuli, as well as the expression and exploration of oil paintings. Much of this is attributed to the reward and fulfilment resulting from the emotional satisfaction.



**Figure 3:** The Visual Perception of Translucency and Perceived Juiciness of Oil Painting Technologies

In Figure 3, a total of 40 participants were divided into three experimental groups. Each experiment aimed to determine participants' rating of the translucency and juiciness of the oil paintings, including parameters like the artworks' highlights, peeled side, bumpiness, color saturation, intensity of light gradient sharpness and visible seeds. The participants' ratings indicated that visual cues of the oil paintings were improved through positive impressions triggered by sharpness, intensity of light, highlights and peeled seeds. On the other hand, color saturation moderately influenced visual perceptions, whereas visual seeds undermined visual perception of the paintings.

Table 2: Visual Effects of Oil Paintings and Visual Perception Abilities

| Qualities of Oil Painting | Effects and Implications          | Example           |
|---------------------------|-----------------------------------|-------------------|
| Highlights                | Dynamics and bright spots of      | Reflections and   |
|                           | the painting.                     | brightness of the |
|                           |                                   | oil paintings     |
| Bumpiness                 | Texture variation and             | Texture of the    |
|                           | uniformity of the painting.       | painting          |
| Color Saturation          | Purity, vividity and intensity of | Faded or washed   |
|                           | the colors in the canvas          | paintings         |
| Light Intensity           | Low light intensity               | Faint paintings   |
|                           | characterizes a less vivid object |                   |
| Light Sharpness           | Less transition from dark and     | Blurred effects   |
|                           | light areas of the paintings.     |                   |
| Visible Seeds             |                                   |                   |

As summarized in Table 2, light gradient and intensity, color saturation, texture, bumpiness and highlights are key elements of oil painting technologies that shape the visual perceptual abilities among audience. These features independently and uniquely shape the audiences' ability to appreciate texture and spatial relationships. For instance, high color saturation confers a dynamic and vivid image of objects in paintings, drawing audiences' attention to the paintings. The converse is true. Similarly, clearly defined surface textures of canvases distinguish and make the recognition of smoothness or bumpiness of objects. This is vital for differentiating the depth and qualities of objects in the paintings. Generally, the manipulation of the paintings' qualities positively stimulates the audiences' visual stimuli, drawing attention towards the paintings. This demonstrates the multidimensional ways though which the diverse artistic techniques and oil painting approaches can be integrated to improve visual perception.

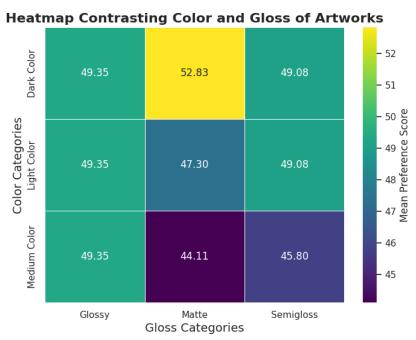


Figure 4: A Heatmap of Color vs. Gloss of Artworks

In Figure 4, the scores of 22 art students, including 11 males and 11 females with a mean age of 23.09 years, who underwent a training on oil technology painting is summarized. The results strongly indicated a higher preference of dark color compared to medium and light color. Similarly, the students reported a lower preference to semigloss wood in contrast to matte and glossy wood. In light of these findings, the preference and selection of oil paintings is based on the technological output and ability to appeal to art students.

| Table 3: Dimensions of Evaluating Audiences' Visual Perceptual Abilities |                                 |                               |
|--|---------------------------------|-------------------------------|
| Dimension  | Explanation                     | Examples                      |
| Beauty   | Attractiveness and physical     | Ugly, artistic, elegant or    |
|  | appeal                          | raffish                       |
| Usability  | User-friendly and ease-of-      | Fragile, firm, afflictive, or |
|  | interaction                     | easeful                       |
| Cultural   | Alignment with cultural norms,  | Insolent, civilized,          |
| Orientation  | beliefs, customs and values     | uncultured, or modern         |
| Economic   | Cost-effectiveness              | Cheap, rare, low-end, or      |
| Efficiency   |                                 | top grade                     |
| Environment  | Sustainability and eco-friendly | Infectant, harmless,          |
| Friendly   | nature of the materials         | harmful, or environmental     |

In table 3, the dimensions of evaluating visual perceptual abilities are summarized, presenting an overview of the underlying themes and issues featuring in oil-based technologies and arts. The visual perception abilities of oil painted artworks exploit human neural activity. Specifically, the oil paintings provoke the higher cognitive processes, and matches the stimulation of visual memory in differentiating unique artistic works like semigloss and the highly-perceived and appreciated dark colors.

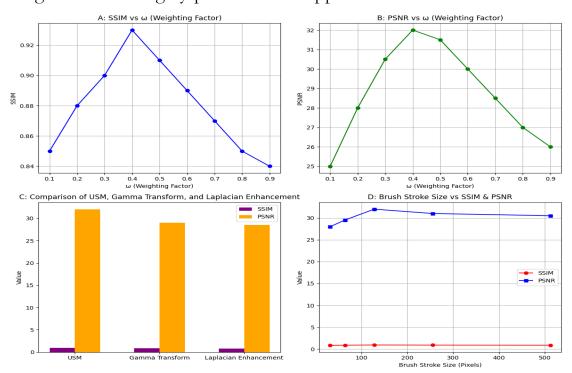


Figure 5: The Importance of Edge Enhancement, Weighting Factor, Brushstroke Size and Performance

In Figure 5, the rendering of oil paintings and images are documented using applicable enhancement approaches like the bush control, detail preservation and edge enhancement: where weighting factor should range from 0.1 to 0.9, the Structural Similarity Index (SSIM) should not attain a peak exceeding  $\omega = 0.4$ , and the Peak Signal-to-Noise Ratio (PSNR) should range between  $\omega = 0.1$  and  $\omega = 0.4$ . When painting, artists must balance the smoothness and sharpness of their work using appropriate brushstrokes to achieve the right texture. For instance, when a painter capitalizes on  $\omega$  value (0.4), a subtle and smooth transition is achieved. This suggests that the painter must use the right size of the brush, and blend the most appropriate painting techniques. culture, paintings are considered as artistic and literary. Thus, an optimized setting in oil painting is seemingly the heart of visual impression and appeal that improves overall ability and perception of the contemporary paintworks.

Table 3: Common Underpinnings of Oil Painting Technology and Visual Percentions

| Theme              | Explanation                | Example                   |
|--------------------|----------------------------|---------------------------|
| Paintwork Analysis | Utilizes brushwork,        | Blending different colors |
|                    | techniques, and color      |                           |
| Product Design     | Refers to product design,  | Intuitive functionalities |
|                    | aesthetics and             | and sleek aesthetics      |
|                    | psychological implications |                           |
| Painting Creation  | Encapsulates a myriad      | Color expression, paint   |
|                    | activities, including      | layering and brushstrokes |
|                    | conceptualization of       |                           |
|                    | paintworks, creation to    |                           |
|                    | the final touches          |                           |
| Image Extraction   | Documentation or           | Editing of oil paintings  |
|                    | isolation of specific      |                           |
|                    | images or excerpts         |                           |

Table 3 represents the common underpinnings of the artistic works that influence visual perceptions and abilities, marking important elements that prop up problems faced in the arts and design industry. Irrespective of whether oil painting is manual or automated, aesthetic standards are irreducible requirements needed to improve visual perceptions and abilities. The oil paintings promote digital symbolizations, and synchronizes visual arts in a diversified manner, enhancing the overall appreciation of the contemporary paintworks.

Table 4: The Integration of Oil Paints and Digital Media.

| Method       | Definition                        | Example                    |
|--------------|-----------------------------------|----------------------------|
| Transmission | Dissemination of information and  | Transmission of oil        |
|              | forms of oil paintings            | paintings in digital media |
|              |                                   | like televisions           |
| Collection   | Assembly of oil painting artworks | Data storage               |
| Feedback     | Response to stimuli evoked by the | Visual sensor              |
|              | oil paintings                     |                            |

As reported in table 4, oil painting technologies are increasingly relying on digital media to improve visual perception abilities, a phenomenon which can explain their relationship. The teaching of oil painting technology aims at improving overall appreciation of the artworks and increase sales or consumption. The advent of digital media's influence in art incorporates important elements such as rendition and synthesis of final artworks that appeal to consumers. For example, the digital media plays a significant role in the production of final oil paintings by removal of noise – which are inconsistencies in paint works. As a result, artists produce near-perfect and appealing paints that encourage audience to give a positive feedback and store the pain works in digital media forms.

## 4. DISCUSSION

Participants substantially demonstrated the relationship between art, and aesthetics in asserting the improvement of visual perception ability. the oil painting technology teaching enhances visual perception ability by imparting or nurturing the ability to observer and appreciate qualities of artworks such as colors, textures, spatial relationships and other fine details. It banks on the ability to draw attention to subtle visual cues that may go unnoticed. Previous psychological studies link aesthetics of artworks to the ability to find appealing intrinsic qualities (Fingerhut et al., 2021). Nonetheless, the appreciation and ability to find the appealing intrinsic qualities in artwork differs among individuals. The psychological and philosophical menu to visual perception ability and aesthetics of artworks contest that appreciation of art and its value hinges on purpose. This draws a difference between people who use art for purposes like recreation, culturally, economically, and individual identities (Fingerhut et al., 2021; Isik & Vessel, 2021). Given the complex landscape of visual perception ability, the visual system appreciates well-characterized paintings that invoke and refine visual awareness. This suggests that refined and high visual awareness improves the oil painting, interpretation and emotional response among artists and consumers. The nexus between art, aesthetics and improved visual perception abilities is a tripartite subject that exploits visual perception and appreciation of color, depth and form to evoke intellectual and emotional responses. Such phenomena can be seen among synonymous impressionist painters like Monet and Vincent Van Gogh. The former's oil paintings exploited dynamic forms and vivid colors to capture the audience's emotions, whereas the latter banked on color

perception and light to improve perception ability (Van Paasschen et al., 2015) Cheumg et al., 2019). Putting it into context, oil painting technology capture all distinctive features in the artists' idea. The utilization of dramatic logic, space, color, texture and other important elements of paintings meticulously combine and render smooth, appealing and irresistible handmade paintings that outdo technology-based paintings (Song, 2023). This elevates oil painting technology as a revolutionary innovation and practice that improves overall perception and appreciation of artworks. The link regards tapping audiences' emotions through the unique abilities of fine details conferred by the paintings. Recent research and innovative ideas to improve visual perceptions of artwork drew led to the investigation of light intensity, sharpness, peeled side, and highlights. To decipher the relationships between these parameters, evidence from previous studies have demonstrated that the illuminance of oil painting technologies enhances visual acuity and appreciation of the contemporary paintings (Bellia et al., 2020). Illuminance of art regards the uniqueness and originality of the paintings. The contemporary oil paintings seek to revolutionize art by changing the audiences' perception and appreciation of art. The progressive introduction of oil paintings has changed audiences' view of non-oil paintings, drawing much attention towards the latter. In the context of color intensity and sharpness, visual perception abilities regard the reasonability of the final products and impressions. The aesthetics of the artworks do not count as the visual abilities regard color, dynamics, motion, form, performance, balance, space, development and light (Yang & Yue, 2024). This suggests that perceptual abilities depend on the artworks' capacity to implicate spatial effects on the audiences' vision. The importance of visual-spatial language confers the role of oil painting technology, and emphasizes the need to teach this technology to art students. Visual perception abilities rely on the physical appeal of the artworks and human health. Often, neurological complications may distort human vision, altering realities and implicating false impressions of a physical object. Even though this may not be a subject of importance in this discussion, oil painting technologies effectively achieve improved visual perception abilities through unique finishes and patterns. Basically, improving visual perception depends on the oil painting and the technology's ability to evoke unforgettable visual experience among the audience (Song, 2023). The teaching of oil painting technology has been pivotal for the development of cinematic art, and exquisite craftsmanship that deeply touch emotions and imbue canvases. This technique seamlessly integrates material texture, rendering exceptional visual representations of objects, and passes the information effectively. This investigation draws insights on human beings' long behavior of exploring colors, coupled with selectivity with regards to aesthetics. Even without language, aesthetics of artworks stimulates emotions and convey information (Yao et al., 2022). Previous studies report that psychological factors significantly improve visual perception ability of the newly crafted oil paintings. This is achieved when attention is paid to the details of the paintings like the brushstrokes, colors and materials. The overall impression created by visually enriched paintings that had not be seen before. Thus, the relationship between the oil painting technology and improved visual perception abilities relies on the intrinsic manifestation of psychological factors. Artists capitalize on this phenomenon as it generates organic response and appreciation of carefully crafted artworks. Optimizing paintworks is the gateway to improved visual appreciation, perception and acceptance across many audiences. In the recent years, researchers have examined the importance of optimizing paintworks to capture the important facets needed in developing unique paint works. Recent studies indicate that image stylization is a determinant of visual perception, with key attention paid to the artists' creative effects through brushstrokes, color, texture and rendition (Song, 2023). Majorly, stylization hinges on filtering and filtering operations that distinguish important from non-important features of a painting. This separation enables painters to focus on important elements of a painting, maximizing the potential of a project. By focusing on the important features of a painting, the audiences' vision strikes the specific features desired by the painter. This enhances the appreciation and attracts even more focus on the paintings. The technical viewpoints suggest that optimizing paintworks regards striking a balance among all the foundations of the processes and practices. Technical requirements tasks oil painters with artistic precision that delivers the desired outcomes. Glazing is a characteristic example of a technique that has been flouted as a solution to translucency, layering and the establishment of luminous depths: the key requirements of an excellent oil painting (Pradell & Molera, 2020). This includes the particulars of glazing applications like the design of glazing surfaces, luminating the glazes, layering and washes. In this perspective, the artists' knowledge, experience and approach to the artistic design sets the differences and significantly implicates the perceptions of the final paint. Arguably, the artists' individual competence, especially in the selection of the painting material, is fundamental to success. Oil paintings have significantly changed the creative arts and paintworks by introducing characteristic features, drawing remarkable differences with traditional

painting. Mainly, the oil paintings exploit aesthetic standards, and simplify the complex paintings and visual arts, which are deeply understood by the audience. In the context of visual art perception abilities, the connection between perception abilities and oil paintings regards important qualities like hassle-free analysis of the paintings, extraction of images and paintings (Liu, 2022). This suggests that an ideal paintwork should be easy-tounderstand albeit other aesthetic qualities. Even with this insight, the quality of hassle-free analysis is somewhat connected to the aesthetic values conferred by attractive aesthetic values of paintworks and the ability to evoke emotions or trigger memory of the appealing paintings. In the context of image processing and the importance of digital media, the relationship between visual perception abilities and oil painting technology emerges through various technological applications deliberated to improve the quality and visual effects of the paintworks. One characteristic technological application embraced by many artists is smoothing which is used to process the final images of paintworks (Sinha et al., 2020). This technology has been effectively employed to eliminate high spatial noise frequencies in paintworks to improve the visual appeal. The deliberate efforts to remove noise in digital oil paintings has been synonymous in the replacement of the traditional methods of paintwork processing. Again, this banks to the visual psychology principle: the deliberate move to craft easy-to-understand paintworks and appeal to the audience.

## 5. CONCLUSION

In exploring the relationships between oil painting technology and the implications on visual perception depths, the current art and creative industry has witnessed remarkable transformations and developments aiming at improved quality and aesthetic art and pain job. However, the concept is less understood and underappreciated as most researchers report that visual language conferred by the contemporary oil paintings supersede visual stimulation. In this research paper, the nexus between oil painting technology and improved visual perception stood out on all facets of the cutting-edge technology that is rapidly revolutionizing creative arts. This relationship is marked by fundamental elements like aesthetics, professional practices like the selection of materials, competence and painters' ability to tap the psychological and emotional exploits of visual perceptions. The most fundamental outcome describing this relationship is the aesthetics, and rendition of the oil paintings. Evidence profoundly

demonstrated that aesthetic oil paints provoke emotional and psychological triggers of pleasure, prompting a higher and positive response, and the converse is true. This finding opens the gateway to examining the fundamentals of an aesthetic and appealing oil paint, where the selection of painting materials, artists' competence, manipulation of painting techniques, brushstrokes, color, texture, layering and editing techniques stood out. The complex landscape of this association focuses the integration of these resources, and the infusion of the digital technologies. An excellent description of oil paint technologies on vision lies in the consistency of the paint works: the smoothness of the materials, minimization of noise and irregularities in the arrangement of elements of the paintings, appropriate textures befitting the paintings in question and color. Color is somewhat a major factor considering the attractiveness of unique color codes. Thus, the oil painting technology exceeds artistic and literary frameworks by imposing visual appeal and emotional satisfaction among audience. The poor visual perception abilities in underproduced oil paints contrasts with exceptional designs, texture, color, aesthetics and well-design paint jobs produced by competent and skilled oil painters. Further, the oil paint technology beats all odds by eliminating common shortcomings of the traditional paint works like noise and other inconsistencies. Integrating the different facets of oil paintings yields visually satisfying paintings. The audiences' ability to draw true positive impressions of the oil paintings is key to understanding the success of the products. Likewise, the incidence of false positive and false negative impressions on oil paintings unmasks the poor or inaccurate visual perceptions of paintings, pointing at the importance of understanding the underlying mechanisms.

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