

A COMPARATIVE SURVEY ANALYSIS OF USER PREFERENCES BETWEEN AI-GENERATED IMAGES AND REAL PHOTOGRAPHIC IMAGES

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Abstract: The emergence of new AI technologies has greatly impacted the process of digital image creation. Currently, AI-generated images can be found in such spheres of life as advertising, entertainment, education, social media, and graphic design. Nevertheless, along with the foster in the realism of the images, there arise concerns whether users tend to prefer AI-generated visuals to real photographic images. The present research paper is dedicated to finding the answer to this question by studying user preferences for AI-generated images over real images using the method of survey analysis. A survey containing specific questions regarding preferences was selected among 100 contributors from different age categories and levels of education. The survey measured preferences of participants according to realism, creativity, emotional effect, trust, visual quality, and general appeal of images. Percentage analysis and mean score analysis was designed for statistical data processing. It was discovered that although AI-generated images have greater creativity and artistic value, real images remain more trustworthy and emotionally appealing to users.

Keywords: Artificial Intelligence, AI-Generated Images, Real Images, User Preference, Survey Analysis

Introduction: The increase in AI has had an enormous impact in the field of digital media and imagery. With the recent advancements in generative AI algorithms like diffusion models and Generative Adversarial Networks (GANs), AI can produce extremely life-like and almost indistinguishable images compared to real-life photographs. AI-generated images are widely used in digital art, advertisements, and content creation on social media, games, and movies nowadays. However, many questions related to authenticity and

reliability of images produced by AI arise. Photographs made using cameras are considered authentic sources of imagery since they capture real moments, while AI can produce artificial visual content. As such, research on preferences of users when viewing AI generated images is highly relevant as this type of imagery grows more popular. The current research aims to investigate how people impression AI imagery by comparing their preferences between AI images and photos. The method chosen for the research is a survey based on preferences regarding factors such as realism, attractiveness, creativity, emotions and trustworthiness.

Research Objectives: The primary objectives of this research are the following.

1. To analyze user preferences between AI-generated images and real images.
2. To evaluate user perception regarding realism and trustworthiness.
3. To compare emotional and visual appeal between both image types.

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4. To identify factors influencing user choices in digital visual media.

Research Questions: The study addresses the following research questions.

1. Which type of image do users prefer: AI-generated or real images?
2. Do users perceive AI-generated images as realistic?
3. Which image type creates stronger emotional engagement?
4. What factors influence user trust in visual content?

Related Works: The development of deep-learning techniques has been a game changer when it comes to creating images using AI technology. One of the major landmarks in the domain of image creation using AI was the advance of GAN (Generative Adversarial Networks) by Goodfellow *et al.*, where AI was operated for generating realistic images using an adversarial learning technique.¹ After this innovation, several research studies were conducted regarding improvements in image creation using AI technology.

Several research studies focused on improving the image synthesis process. For instance, Radford *et al.* designed deep convolutional GANs that enhanced the capabilities of image representation and synthesis.² Later, Rombach *et al.* introduced latent diffusion models, an advanced system capable of generating realistic and high-resolution images without increasing computational burden.³ Along the same lines, Dhariwal and Nichol demonstrated that diffusion models for image synthesis could outperform GANs.⁴

As AI-generated images became increasingly realistic, researchers began analyzing the perceptions and emotional responses of individuals toward AI-generated visual content. Grassini and Koivisto examined how people's attitudes and personalities affect public perception of AI-generated art.⁵ They observed that individuals tend to react more negatively to AI-generated artworks when informed that the images were created by artificial intelligence rather than humans.

Van Hees *et al.* conducted an experiment to examine human perceptions of AI-generated visual content

compared with human-generated art.⁶ The results showed that participants favored AI-generated images because of their higher aesthetic value and stylistic consistency. Nevertheless, participants were able to distinguish whether an image was AI-generated or human-made at rates better than chance. Similarly, Jacobs *et al.* demonstrated that people preferred human-generated art to AI-generated art when information regarding the artistic perspective was provided.⁷

Emotional responses and aesthetic evaluations of AI-generated visual artifacts have also been investigated in recent studies. Grassini examined the relationship between computational complexity and subjective perception of AI-generated art.⁸ The findings suggested that more advanced algorithms enhance both the quality and creativity of AI-generated images; however, emotional depth remains more strongly associated with human-generated artworks.

Personalized image-generation systems based on AI have also been explored. For example, Nakashima proposed a method for generating preference-based images through human interaction.⁹ The study revealed that incorporating human preferences improves personalized image synthesis performance.

Another issue related to modern AI-generated visual content is its potential to spread misinformation. Huang *et al.* performed an eye-tracking analysis of users' face-recognition abilities when exposed to both human-generated and AI-generated images.¹⁰ Their findings indicated that most participants failed to correctly identify AI-generated faces, particularly those produced using advanced diffusion-based algorithms.¹¹

The social implications of AI-generated images in online platforms and political contexts have recently attracted attention. Chen *et al.* examined the diffusion of multimodal AI-generated content on social media during the 2024 U.S. Presidential Election.¹² Their study highlighted the rapid advancement of AI technology and its influence on public opinion and digital trust.

It is well documented in the literature that face-recognition systems encounter challenges due to

variations in facial characteristics caused by aging. Recent advancements in the field have led to extensive research aimed at developing robust face-recognition techniques that address age-related intra-class variations.¹³⁻¹⁵

Comparative analyses of AI-based decision intelligence and traditional image-processing-based decision-making techniques have revealed a fundamental difference: AI-based approaches tend to be more adaptable and accurate in complex environments, whereas traditional methods often provide greater interpretability and efficiency in constrained settings.¹⁶

Although numerous studies have investigated AI image-generation techniques, user emotions, and fake-media detection methods, there remains a lack of survey-based research examining user preferences for AI-generated versus real photographs across multiple evaluation dimensions, including realism, believability, creativity, and emotional impact.¹⁷ Therefore, the purpose of this study is to address this gap by conducting a survey analysis of user preferences regarding AI-generated and real photographs.

Methodology

Research Methodology: The research makes use of the quantitative method through surveys. The participants are exposed to the set of images generated by artificial intelligence software as well as actual photographs. After being exposed to the images, the participants answered a questionnaire about their preferences.

Participants: One hundred people participated in the study shown in the following table 1. The participants are comprised of university students, teachers, professionals, and social media users in figure 1.

Table 1. Participant Distribution

Age Group	Participants	Percentage
18-25	42	42%
26-35	31	31%
36-45	18	18%
Above 45	9	9%

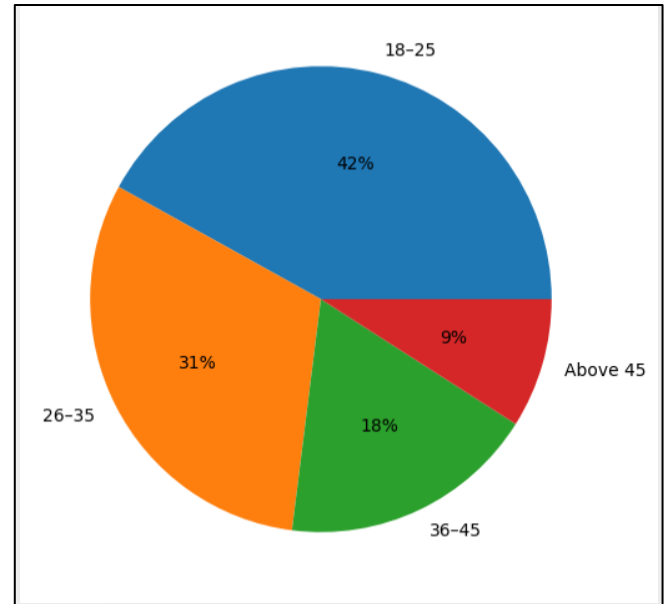


Figure 1. Age Group Distribution

Survey Criteria: Participants evaluated images based on the following factors in table 2:

- Realism
- Creativity
- Emotional Appeal
- Trustworthiness
- Visual Quality
- Overall Preference

Table 2. A 5-point Likert scale

Scale	Meaning
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Results and Analysis

Overall Image Preference: This segment shows the preference by participants towards artificial intelligence images or real-life photographic images. The participants were awarded several sample images of each type and asked which image types they like better. It seeks to determine which set of

images is liked more by the masses. The preference of users was made according to their visual impression and overall satisfaction. The data generated through the survey are provided in Table 3 and figure 2 below.

Table 3. Overall, Image Preference

Image Type	Number of Participants	Percentage
Real Images	61	61%
AI-Generated Images	39	39%

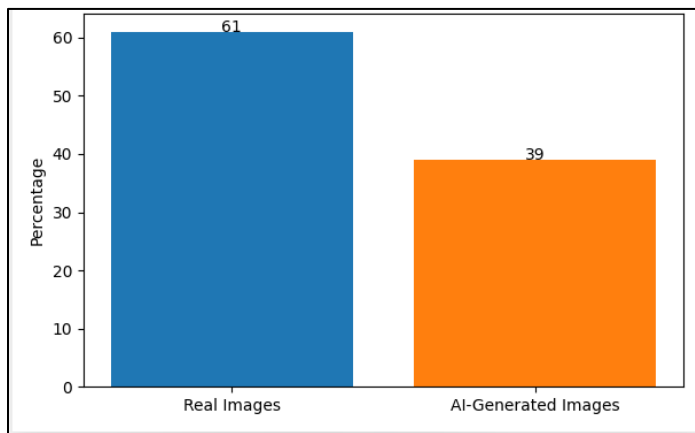


Figure 2: Image Preference

Realism Evaluation: The realism aspect has been identified as one of the main elements affecting the impression made on the users by visuals. Each visual was rated based on its realism as compared to real-life images. Realism will help in determining the extent to which AI images can mimic the authentic photographic images. The visual ratings were performed using a five-point Likert scale, whereby respondents could choose strongly to disagree with strongly agree options table 4 and figure 3.

Table 4. Realism Evaluation

Image Type	Mean Score
Real Images	4.62
AI-Generated Images	4.08

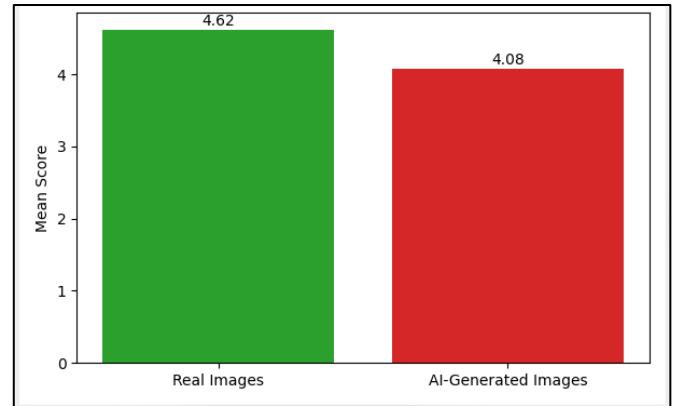


Figure 3: Realism Evaluation

Creativity Evaluation: The creativity assessment assesses the level to which the pictures generated are seen by participants as visually and creatively stimulating. AI-created pictures have some imagination in them and better visual stimulation compared to real pictures. Here, it will be assessed if the pictures created by AI are perceived by participants to be more creative than real-life photos. The findings of the creativity assessment are presented in Table 5 and figure 4.

Table 5. Creativity Evaluation

Image Type	Mean Score
AI-Generated Images	4.71
Real Images	4.12

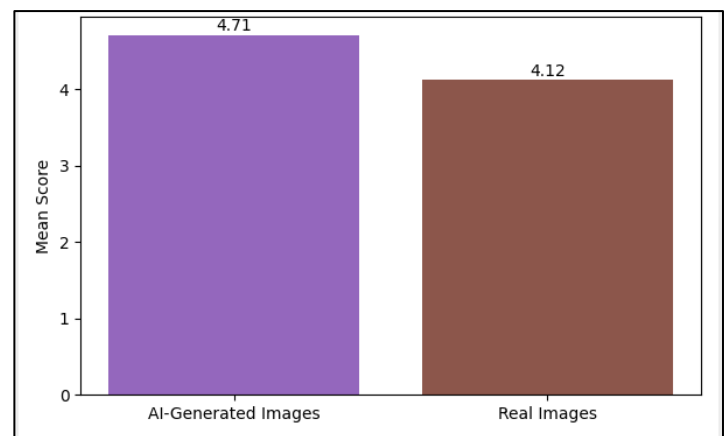


Figure 4: Creativity Evaluation

Emotional Appeal: Emotional appeal is the capability of the image to evoke emotion and psychological responses from the audience. In terms of evaluation, which image evoked more emotions such as happiness, empathy, excitement, or reality

was determined. Real photos are usually linked to actual human experiences that might make their influence emotional. Emotional appeal will conclude how users' impression about the images created by the artificial intelligence algorithm. Emotional Appeal Evaluation Results are explained in Table 6 and figure 5 below.

Table 6: Emotional Appeal

Image Type	Mean Score
Real Images	4.55
AI-Generated Images	3.96

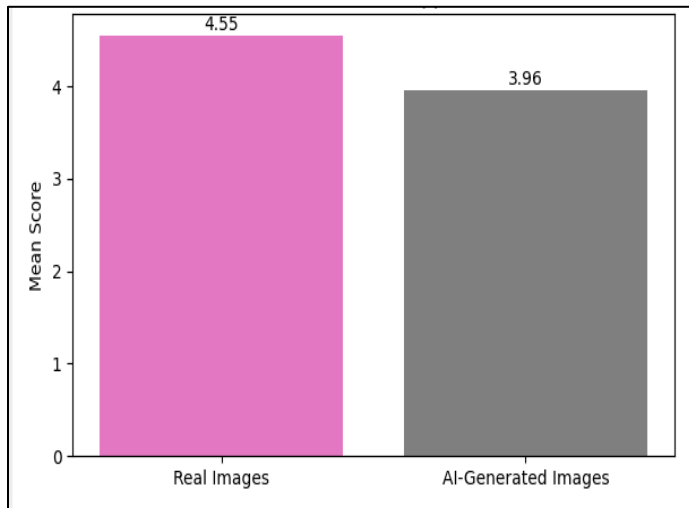


Figure 5: Emotional Appeal

Trustworthiness Analysis: Analysis of trustworthiness includes assessment of the degree of trust that the contributors have in each type of picture. Users were supposed to distribute their opinion on whether the pictures can be considered trustworthy, genuine, and true to life. Given the increasing use of technologies for creating deep fakes and other artificial contents, the matter of trust becomes quite important when communicating through digital channels. This part is focused on assessing users' trust in AI-generated pictures vs. real photos shown in table 7 and figure 6.

Table 7. Trustworthiness Analysis

Image Type	Mean Score
Real Images	4.74
AI-Generated Images	3.52

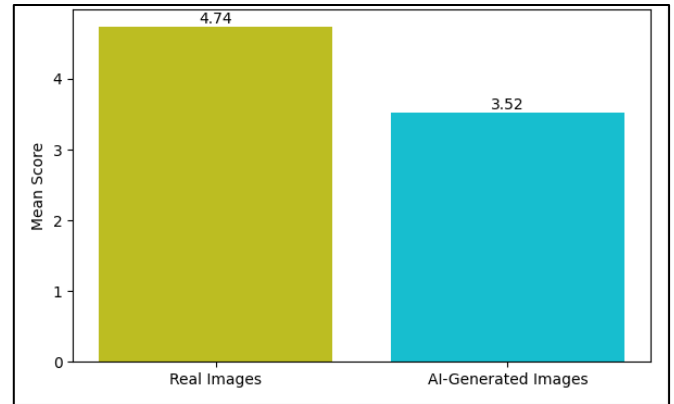


Figure 6: Trustworthiness Analysis

Discussion: In summary, the findings of the present study indicate that a variety of psychological, emotional, and technological factors influence users' attitudes toward both AI-generated and real images. Although significant advancements have been achieved in the realism and quality of AI-generated images, the survey results suggest that users still tend to prefer real photographs in terms of trustworthiness, emotional connection, and authenticity.

One of the key findings of this research was that users generally preferred real photographs over AI-generated images. Real photographs were more frequently associated with concepts such as reality, truthfulness, and authenticity. One possible explanation for this preference is the natural human affinity for real-world experiences and environments. Furthermore, participants perceived real images as eliciting more genuine emotional responses because they depict actual events and situations experienced by people. This finding is consistent with previous studies that highlighted the importance of emotional engagement in visual art and image perception.^{5,7}

In contrast, AI-generated images received high ratings for creativity and aesthetic appeal. Respondents appreciated the enhanced visual qualities of AI-generated content, including vibrant colors, imaginative compositions, and unique stylistic features. These results demonstrate the effectiveness of modern AI image-generation systems in producing visually attractive content suitable for applications such as entertainment,

advertising, gaming, and digital media. The ability of AI tools to generate visually engaging images may also contribute to the high levels of user interaction observed with AI-produced content.¹²

Another important insight from the survey is the growing difficulty users experience in distinguishing between AI-generated images and real photographs. Several participants reported that contemporary AI-generated images appear remarkably similar to authentic photographs. This observation aligns with previous research showing that diffusion-based AI models have substantially narrowed the gap between synthetic and real visual content.^{3,4} As AI image-generation technologies continue to advance, it is likely to become increasingly challenging for ordinary users to accurately identify whether an image is AI-generated or authentic.

The survey also revealed age-related differences in perceptions of AI-generated images. Younger participants (18–25 years old) demonstrated greater acceptance and appreciation of AI-generated visual content. This trend may be attributed to their higher exposure to digital technologies, social media, and AI applications. In contrast, older participants expressed greater concern regarding the reliability and trustworthiness of AI-generated images, particularly in contexts such as news reporting, journalism, and documentary photography. These findings suggest that familiarity with emerging technologies plays a significant role in shaping attitudes toward AI-generated content.

One of the most notable differences between real and AI-generated images concerned credibility and trustworthiness. Participants generally regarded real photographs as more reliable than AI-generated images. This perception is closely related to growing concerns about deepfakes, manipulated media, and the spread of misinformation. Respondents recognized that AI-generated images can depict events that never occurred, alter personal identities, or be used to mislead audiences. Consequently, despite their visual attractiveness, AI-generated images are not yet perceived as fully trustworthy. Recent studies have similarly reported

concerns regarding the authenticity and credibility of AI-generated visual content.^{10,11}

Overall, the results suggest that while AI-generated images excel in creativity and aesthetic quality, real photographs continue to hold a stronger position in terms of emotional authenticity, credibility, and user trust. These findings highlight the complex relationship between technological advancement and human perception, emphasizing the need for responsible development and transparent use of AI-generated visual content.

Also, the ethical aspect was an important factor in determining the opinion of people about the generated images. Respondents raised issues about copyright ownership, originality, fair artistic practices, and even potential abuse of AI-generated visuals. Some participants stated that reliance on such technology might harm the career of human painters and photographers. Some pointed to the require for transparency when publishing images constructed using artificial intelligence in social media, journalism, or advertising. Ethical norms and guidelines will be needed more as generative AI technology progresses.

It is also worth noting that in different circumstances people would use either real or AI images, depending on their preferences. In general, participants were in favor of using realistic photos when creating news reports, study materials, legal documents, and even personal photos that remind of happy memories from the past. In contrast, generated images were greatly preferred by many when it comes to fantasy art, storytelling, gaming, marketing, or illustration.

Finally, this study confirms the increasing impact of generative artificial intelligence technology on digital communications in the contemporary world. Today, AI-generated pictures have become more broadly operated within social networks, marketing campaigns, entertainments, and digital content generation. The increased accessibility of generative AI software can result in people gaining higher knowledge and tolerance of synthetic pictures. Technological progress can help to decrease differences between synthetic and real pictures,

which might eventually influence community standards concerning visual content credibility. Nevertheless, there are some limitations to this research despite its usefulness and informative results. First, the number of participants in the test was relatively low – 100 respondents; thus, one cannot consider this number as a representative one to use it for further research or practical performance of the results in different cultures. Another thing is that the picture of users may vary depending on the category of pictures utilized in the experiment, the quality of the image used, the experience of the participant, etc. In any case, no matter how valuable AI images are regarding their uniqueness and creativity, reality will prevail in the fields of credibility and emotional response to the picture shown.

Conclusion: The current study evaluated the user preference towards artificial intelligence-generated images compared to real ones with the help of survey-based data analysis methods. It has been determined that despite the popularity of the former because of their level of creativity, artistic innovations, and aesthetics, users have a greater preference towards real images due to the increased level of authenticity, emotional involvement, and credibility.

What requirements are to be noted is the statement that artificial intelligence-generated images tend to score high on parameters associated with artistry and creativity. As can be imagined from the findings of the research conducted, the surveyed individuals regarded them as better when it approaches imagination and creation of aesthetically pleasing images. In this case, AI generators may prove to be quite useful in sectors where artistry prevails.

Another major problem was noted in this research, and that is a distrust of AI-generated visuals. The participants were concerned about the fact that artificial intelligence could give false data, employ deep-fake technology, and so on, thus making them distrustful of AI-created imagery. Distrust may be one of the main obstacles preventing the widespread use of synthesized images in such fields as journalism, education, and document creation.

However, it is critical to consider the perspective of use when determining the quality of user experience. As per the survey results, real photographs would be more effective in conveying information and helping people record events, whereas artificial images would be better for making art or entertainment.

Moreover, one should consider the influence of digital technology on users' behavior. Namely, young respondents were more interested in AI pictures while the old ones appeared to be skeptical of artificial intelligence.

However, some weaknesses are inherent in this research despite its importance. First, the sample size managed in the test was small, and second, the experiment involved only general groups of pictures and not specialized groups such as medical images, journalism images, industrial images, etc. Future research might incorporate large-scale datasets, cross-cultural study, and use such technologies as eye-tracking technology and neural responses analysis.

In conclusion, the development of the images generated through artificial intelligence has reached heights, and now it is hard to distinguish between the quality of such pictures and real ones. Despite this, the former still retain several distinct advantages over the latter. These include credibility, reliability, and emotional value.

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