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A Study of Artificial Intelligence's Impact on Aesthetic Standards and Its Potential Social Dilemmas

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Abstract: The advent of Artificial Intelligence[1] in aesthetics is altering the concepts of beauty and renewing revolutionary societal justice perspectives. Machine learning tools, powered by big data, determine beauty as such, thereby denying cultural and historical interpretations that have long dominated the discourse. Combating these arguments, AI's quantification of beauty gives a 'fair' solution; nonetheless, AI will replicate the present bias. The application of AI in facial analysis and photo editing, for instance, only enhances racism and sexism, thereby creating much anxiety about appearance and portraying the norm of beauty. It directly puts the prospects of shared cultural differences at risk, which is rather worrying as it weakens the concept of diversity. Additionally, AI empowers the public rather than experts, sacralizing ordinary people's tastes and preferences, thus limiting the creative and innovative processes in favor of the crowd's mass-cultural standards. The ethos and politics of AI in these domains of aesthetics present a sensitive area that should be handled cautiously because it perpetuates social injustices. When these biases are eliminated and better standards are set for the AI to learn from, AI has the possibility of enhancing the aesthetic realm and society in general. This essay critically analyses the consequences of the establishment of AI beauty standards and calls for a more cautious manner in which AI is implemented such that it improves societal rich diversity rather than eradicating it.

1. Introduction

The growing dominion of Artificial Intelligence in aesthetics has brought in a unique viewpoint when it comes to understanding beauty—that means algorithms and data are slowly defining the meaning and standard of beauty[2] . Beauty has been perceived subjectively combined with cultural backgrounds, personal feelings, and human history, varying widely from one region to another. AI changes this situation through its significant volumes of data to analyze standard objective beauty. This new standard, driven by data and algorithms, brings humans a "fair" approach to defining beauty— quantifying whether the epidermis characteristics of a person or an object meet the criteria based on big data.

Quantifying beauty might sound neutral and fair to face, but it may embed and perpetuate existing social prejudices. For instance, in 2016, ProPublica reported an investigation where machine-learning-based tools used to assess crime recidivism within the United States were biased

against African Americans[3] . In addition, data heavily relies on making predictions that might not represent humankind in totality and is, therefore, a tool to reinforce prejudiced stereotypes against certain social groups. Lastly, AI may challenge conventional authority on aesthetics through its unique approach. Is AI capable of challenging the measure by which people think deeply about beauty, or is it a measure of the amount of data like colour and brightness on the surface?

However, more importantly, under this "fair" approach to objectifying beauty, Will AI also homogenize cultural expression and reduce the fullness of diversity in aesthetics? AI will redefine beauty, but this needs to be considered, not merely to applaud current changes and adjustments it affects. Is it possible that AI might help bury social inequality under the mask of sophistry in technology, or will AI indeed manage human aesthetic rights equally?

Thus, this research paper will articulate the potential problems of beauty quantification.

2. Literature review

AI is becoming present and pervasive in many aspects of life, and the aesthetics and beauty business is not an exception. This literature review takes an interest in the matters of beauty standards, social equity, and cultural diversity affected or influenced by AI, more particularly on how the use of this technology in facial analysis and aesthetic judgments provides biases and reconstructs existing ideals.

In the last few years, such technologies as AI in the field of the analysis of the face have started changing the definition of the notion by replacing it with numerical values calculated by means of geometrical characteristics. Zhang et al.[22]explain how attractiveness is calculated by the systems of artificial intelligence to define the attractiveness of the face using the inequality of the square distance from the mean shape of a face. This argues with the symmetry ideas of the Pythagoreans, but AI tools' use of quantifiable information can disenfranchise personal and multicultural beauty.

The beauty standards are thus perpetuated through the use of AI applications, particularly in editing applications and various social media platforms commonly used nowadays. Wick and Keel [21]posit that the tendency to compare one's physical appearance to images in social media that have been photoshopped detracts from one's self-esteem. Virtual images created by AI remain thin and unrealistic, which triggers appearance-based stress in the majority of people by the age of 27[20].

The integration of AI in aesthetics has led to various ethical issues, mainly racism and sexualization. In Dominguez-Catena et al.[7], the authors noticed that it is possible for AI systems to reproduce the prejudices that are present in the learning data. This was well illustrated in the 2016 Beauty of the Rahman's Maulvi and Islamic furniture art piece. An example is the AI contest, where the algorithm mostly preferred white skin since AI training material did not have minorities[13]. A crucial concept in the current context is Ruha Benjamin's [4] idea of the 'New Jim Code', in which she demonstrates how technological infrastructures express and maintain existing marginalisations.

The utilization of AI, leads to the globalization of beauty standards, proved to be dangerous for cultural diversity. AI can promote or fulfill low-variation aesthetic standards as discussed by Bellaiche et al. [3]. Chen et al. [5] explained that the incorporation of AI in the identification of beauty lowers cultural diversity and endorses a European look. This not only impacts the process of people's self-identification but also devalues the variety of cultural experiences on a global level.

The definition of beauty has been democratised by AI's analysis of massive user data. According to Panda et al. [19], such shifted aesthetic trends can be illustrated through sociability in relation to AI in social media platforms and consumers' behaviours. However, as a bottom-up approach, this might just serve to entrench the current ideas of beauty and aesthetics instead of promoting the development of other forms of aesthetics. According to Ozimek et al.[18],AI's impact on market

trends has the potential of standardization and restricting the imagination of and individuality in design.

The literature reviews show the extent to which AI influences Society, culture, and ethnicity by recasting the beauty standards. Although AI has the prospect of making beauty standards more accessible and improving experiences across aesthetics, it entails biases that lessen cultural variety. Solving such issues can only be done through a partnership between policymakers, those who work on developing technology, and society in general when it comes to AI to make it add up to mainstream society and become as diverse as the world we live in.

3. The Transition from Philosophy to Artificial Intelligence in Understanding Beauty

Beauty has been one of the most profound concepts of philosophy, serving to centralize themes with time in artistic expression. From Plato to Aquinas, down through the ages, to modern philosophers like Kant and Hegel, philosophers have yet to debate the definition of what constitutes beauty [5]. Beauty is usually related to sensory experiences and deeper intellectual engagement.

Pythagoras started a mathematical approach to understanding beauty by its relation to symmetry and proportionality, considering that some elements might be objectively measured and quantified, mainly depending on the observer's perception[6]. It means that beauty may have some measurable properties but that its appreciation is subjective.

Thomas Aquinas simplified the notion by defining *beauty* as "that which pleases when seen" [7], thus expressing the immediate sensory satisfaction brought by an object. In this regard, beauty tends to have an emotional and psychological response to the viewer of the concept, making it quite accessible and immediate.

In modern times, Kant and Hegel further developed these ideas. Kant described beauty as an object's "purposelessness" appreciated through disinterested pleasure. At the same time, Hegel posited beauty to be "the sensual manifestation of the idea," interweaving it with truth and goodness, suggesting that the actual idea of taste is somehow a synthesis of sensuous and spiritual apprehension.[8].

The perception of beauty has clearly changed in recent years, as seen by shifting cultural tendencies towards the appeal of the artificial and increased apprehension towards ideas of "natural beauty" [9]. One way to interpret this tendency is as a societal reaction to social media's ascent, technical improvements, and shifting aesthetic standards. Although the beauty business has always shaped beauty standards, technological improvements in cosmetic treatments, computer editing, and social media platform filters have given people unparalleled power over their physical appearance. These technologies enable people to adhere to particular beauty standards—often artificially created—that are unachievable or unsustainable in the absence of technology.

The emphasis on surgically enhanced beauty is becoming more and more indicative of a broader cultural obsession with control and perfection. A common desire for an idealised version of oneself, where every flaw can be fixed and every feature tailored to fit an often-uniform aesthetic greatly shaped by the culture of celebrities and the marketing machines of the beauty industry, is reflected in the widespread use of photo editing programs and software[10].

However, with the development of AI, this technological change is undergoing heavy philosophical questioning. AI systems like those discussed by Zhang, Zhao, and Chen use geometric features to quantify the attractiveness of the human face. [11]The faces are analyzed within a facial shape space, where further analysis is carried out to know how some geometric features will relate to attractiveness. The study suggests that faces closer to the mean shape are often regarded as more attractive, an idea that dovetails with Pythagorean notions of symmetry but appends complexity.

The ability to measure beauty with AI through data and algorithms has questioned our traditional, subjective interpretations. Also, the danger of such an approach is that diversity could be lost in appreciating aesthetics. In so doing, standardizing in all respects the view of "beauty," AI might then narrow the spectrum of beauty significantly and, in so doing, marginalize unique forms that do not fall into the criteria put forth [12] This shift from a subjective overview of beauty to objective measurement changes how we define beauty and how it might be valued in modern society.

Social media sites increasingly feature filters and AI-powered picture editors and generators in their design tools. This implies that anybody may edit a photo to modify their own or someone else's appearance with only a button click. This might involve modifying facial characteristics, smoothing out skin, or even reshaping someone's physique. In fact, technology has advanced to the point where you can use it to produce fully artificial images that are eerily realistic—all created by machine learning.

4. Social Influence of AI on Social Facial Analysis

AI Facial Analyzer is a program that assesses how attractive a face is by analyzing facial factors like the size of the eyes, fullness of the lips, and skin quality. Since the way AI assesses beautifully is based on the data collected from the majority of people, this standard of measurement mirrors a popular social trend: people cater to the public's taste to be "beautiful"[13]. Leave alone photo-editing programs like FaceTune, which people swarm to utilise in an attempt to mask flaws or rectify defects. AI-generated photos have the potential to surpass human beauty standards. They provide an idealised vision of beauty that is nearly unachievable for the common person, with beautiful skin, symmetrical features, and exaggerated body proportions. Online, these "perfect" images are already becoming more and more popular. A software that uses generative artificial intelligence is being used to produce the newest Instagram model, which looks like a real-life Barbie [14]. Perfect, if not cinematic, are the photographs; the model has killer style, flawless bone structure, and lush hair.

The development of this technology has enormous ramifications. The predictable one is the growing appearance anxiety. Dove's 2024 State of Beauty Report states that even when they are aware that what they see online is AI-created or phony, two out of every five Canadian women are compelled to modify the way they look. Indeed, four out of ten Canadian women would sacrifice at least a year of their lives in order to fulfill their aspirations of beauty. These are alarming figures. Since beauty is no longer an abstract concept, people tend to make themselves meet the requirement to be "beautiful." For instance, the Facial Analyzer only assesses limited areas of beauty, which only focus on appearance. Many people will feel even more inferior when they do not meet these standards [15] .This phenomenon is likely widespread in societies where beauty is an outward characteristic that is held in high value. For instance, a small face with big eyes is a hallmark of beauty in most East Asian societies, and these traits are often drawn from regional data and influence further treading of definitions of beauty across human cultures, leading to narrow AI measures of beauty.

Such an attitude glamorizes the beauty driven by technology and may push individuals to extremes. Ideas of beauty may only grow further detached from reality if these programs begin to gain traction and surpass the influencers and real-life Instagram models who are already escalating a beauty standard bolstered by fad diets and FaceTune. Relentless exposure to and the dissemination of carefully chosen, digitally modified images via the use of generative AI systems will further exacerbate the decline in self-worth to the point where even models from real life cannot keep up. As people attempt to achieve an unachievable degree of physical perfection, the demands to adhere to idealised standards—which are already reinforced by social media—can have a negative impact

on mental health. When cosmetic surgery and genetic modifications are fully normalized in society as valid mediums of increasing or altering external beauty, then it does expose something very deep. Instead, people would take the risk of physical suffering and being at peril during surgery to shape themselves after the popular standards of beauty. This tendency reflects a more considerable cultural change where appearance is more important than kindness and inner beauty.

It is not AI alone whose impact on the singular definition of beauty resonates. Instead, this trickles down to the effect in the broader society. AI-defined beauty and internet-disseminated standards of beauty might lead to a culture of comparison, where one's self-identification of beauty is constantly pandered to by the masses and compared to the image set up by the data. This may develop into a homogeneous cultural field and eliminate the richness of diversity. Emphasizing appearance may make it impossible for other qualities to come to the foreground and may lessen the zeal for what is true and beautiful.

5. Ethical and Political Challenges

5.1. Racial Bias and Marginalized Group Stereotypes

Alongside this promising domain of application of artificial intelligence to reshape aesthetic perceptions, the problem of training it with incomplete data opens up fundamentally profound sociocultural challenges. The increase in AI systems' applications, more specifically, in the domain of facial expression recognition and generative AI, is expected to make aesthetic judgments more objective and universal. However, in practice, their training data are often biased or flawed; thus, they tend to aggravate prevalent racial and gender discrimination, leading to social injustice.

For example, Dominguez-Catena et al. have found in their study that AI application in facial recognition techniques has only replicated and reinforced the racial and gender biases available in the training data.[16] Moreover, 2016 saw the debut of Beauty.AI organised a competition for ladies, choosing the winner. As it turned out, practically every winner had a white complexion. This has brought up the important question of AI bias in the cosmetics sector. With the help of Microsoft and a "deep learning" team named Youth Laboratories, Beauty.AI developed an algorithm that evaluated beauty by using massive photo databases. Alex Zhavoronkov, chief science officer of Beauty.AI, stated that although there were additional factors why the algorithm favoured white individuals, the primary issue was that there were not enough minorities in the data the project utilised to set standards of appearance [17]. The input data successfully guided the robot assessors to conclude that light skin is an indication of attractiveness, even though the researchers did not create the algorithm for that purpose. The most straightforward explanation for biased algorithms is that they are the result of deeply ingrained biases held by the humans who build them [18]. It follows that, contrary to popular belief, algorithms are frequently able to reinforce preconceived notions and duplicate them.

Ruha Benjamin creates the idea of the "New Jim Code" in her book "Race After Technology," which addresses this topic. It explains how prejudices and discriminatory behaviours are ingrained in technology systems, upholding social inequities and racial hierarchy. It covers how racial prejudice can appear in a variety of contexts, including biassed design and development processes and biassed data used to train algorithms. The author contends that systematic racism and disparities in power are the true causes of these prejudices, not chance or inadvertent behaviour. For instance, an AI system trained on a dataset featuring predominantly white facial characteristics was considerably worse at detecting the facial expressions of people of colour. This not only suggests that the more advanced systems in use today are not impartial but also propagates the idea that white facial features are the gold standard for beauty and the interpretation of expression. Not only does this marginalize non-white groups technologically, but it can also promote stereotypes of such

groups in the general sociocultural reality.

More specifically, generative AI technologies, now regularly used on most social media, including TikTok, platforms, often develop filter features based on biased data that tend to reinforce preferences for some racial traits and gender features, just as found in Kuck's study[19]. This highlights how overly simplistic the definition of beauty is. The AI results highlight the tool's shortcomings and latent biases while also appealing to antiquated assumptions. Platforms' recommendation algorithms frequently give preference to photos and videos that meet traditional Western notions of attractiveness. Such a prejudice results in a desire to have lighter skin, straight hair, and any other traits that classify an individual as having European roots.

For instance, a global trend of sending or putting on skin lighteners symbolize the conforming to lighter skin tones. However, by using technology, such as filters to lighten one' skin, or tweak facial features to achieve that of a white Eurocentric standard, it amplifies this problem and makes light skin the ideal[20]. This may reduce the variety of body shapes and looks that are shown online, which may cause people who do not fit these ideals to feel inferior or alienated. In the long term, such a biased application of technology has the potential not only to lead to a lack of aesthetic diversity but also to reduce social respect and acceptance for aesthetic diversity, further solidifying and promoting an unfair and non-inclusive aesthetic.

Therefore, potential negative consequences presented by AI technology in aesthetic applications must be noticed and thoughtfully analyzed. AI technologies open up new tools and new possibilities for aesthetic judgment. The greatest challenge in this situation is how to diminish the potential bias among people of colour and marginal social groups.

5.2. Transformation of Authority in Beauty and Aesthetic

AI's application in aesthetics is fundamentally changing the attribution of the right to define beauty. Ai transformed the top-down structure to define what is beauty, which was controlled by a few elites, into a bottom-up structure.

In traditional aesthetic authority structures, such as fashion gurus and colour authorities, the standards that determine beauty are often set by a few individuals within the industry based on their expertise and market influence. While this approach ensures professionalism and consistency since people tend to believe what "experts" say [21], it also limits aesthetic diversity and the right of more people to define beauty.

With the advancement of AI technology, especially as consumer-driven data analytics become more feasible, the definition of beauty is gradually being democratized. By analyzing large amounts of user data, such as purchasing behaviours, social media interactions, and personal preferences, AI can depict broader public aesthetic trends.[22] For example, in fashion design, AI can analyze which styles get more likes and comments on social media and which colours sell more in different seasons. Based on this data, AI is able to predict future trends, which in turn guides designers and brands to develop products that match popular aesthetics. The bottom-up structure based on AI's application of deciding what is beautiful offers everyone an opportunity to contribute to the aesthetic standards through their behaviour and social media activities.

However, data analytics do not judge aesthetically but provide an objective standard of aesthetic judgment. The data collected in the market reflects the reality of consumer choices, which could be vastly skewed by the existing marketing strategies and sociocultural environments to a considerable extent. Thus, AI reproduces and reinforces already existing aesthetic preferences rather than creating new aesthetic standards. For example, using AI to establish aesthetic norms could result in a form of aesthetic homogenization. If market trends are predicted through algorithms, designers and brands may design in the same way, thus leading to a decrease in design diversity and

innovation. This flattening could curb designers' creativity and the development of individual styles.

Moreover, the widespread use of AI is likely to diminish further the place of human intuition and emotion in arts and design[23]. Designing is not only the meeting of market requirements but also a piece of art, with the conveyance of one's personal emotions and cultural values. While human society goes on in this manner of following AI norms, it must allow a way through these artistic and cultural dimensions.

Finally, it is essential for us to discuss the influence of technology development on social culture and equality. Under AI-decided standards of beauty, if there are differences in the perception of beauty in a particular social group, we should make sure the AI system reflects this diversity properly[2]. This executable idea would further reduce bias within AI when making judgments on aesthetics and act positively in promoting social justice and cultural diversity. Therefore, AI, as a tool, should be used to enrich our aesthetic experience and promote a more inclusive society instead of being an accomplice to social inequality.

6. Conclusion

In general, it can be stated that the influence of AI in the matter is significant and presents itself through multiple factors. AI modifies the social image by introducing the metric for beauty, changing people's and communities' attitudes, and raising ethical and political issues. This is so because these changes can either enhance or erode social relations infused with gender, race, class, age, and disability prejudices. In order for AI to contribute toward a change toward a more inclusive and diverse aesthetic representation, it is necessary to correct these issues built into AI. In this way, can AI capabilities enhance the perception of beauty and promote the principles of equal opportunities? This involves the cooperation of policymakers and society, as well as technology developers, to ensure that diversity and equality are a central theme as more advanced and pervasive forms of AI are created and used across society. It is only in this way that we can grow and pioneer the possibilities of AI to improve the beauty we discern and to greatly influence enduring social good.

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