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The Application of Artificial Intelligence Facial Recognition Technology in Tourism Visual Marketing

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ABSTRACT

This article focuses on the application of artificial intelligence in tourism visual marketing, emphasizing the practical forms, opportunities, and challenges of facial recognition and facial emotion recognition technology. Facial recognition achieves precise identity and interest matching, while facial emotion recognition analyzes real-time expressions to determine emotional states. Together, they can deliver personalized services, enhance interactive experiences, optimize advertising placements, and product development, bringing opportunities such as improved customer experience, increased operational efficiency, enhanced market competitiveness, and innovative products and services to the tourism industry. [14] However, the application of these technologies also faces challenges such as data privacy leaks, insufficient recognition accuracy, and social ethical controversies. This study aims to provide practical guidelines for tourism companies to formulate AI visual marketing strategies, helping to balance technological application with visitor rights and achieve sustainable development.

KEYWORDS

Artificial intelligence; Travel visual marketing; Facial recognition technology; Application

1. INTRODUCTION

1.1. The Central Role of Visual Marketing in the Tourism Industry

In the digital age of information explosion, consumer attention has increasingly become a scarce resource. Visual elements, primarily including images, videos, designs, and spatial layouts, have risen to become core pillars of modern marketing strategies due to their strong information-carrying capacity, emotional appeal, and immediate attraction [14, 15]. Therefore, in current marketing processes, visual elements should be used as tools, with marketing being their primary goal [28], which means engaging in visual marketing. Visual marketing is not only a marketing technique but also a visual experience; it refers to promoting products or brands through visual effects [28], mainly including space, graphics, media, displays, and styling. Through this series of visual communications, the concept and core aspects of visual marketing are expressed [29]. Tourism visual marketing refers to conveying brand information and attracting consumers through visual senses. This includes, but is not limited to, advertisements, posters, packaging design, and the architectural appearance, interior decor, and corporate logos of tourist destinations [23]. Visual marketing is particularly important in the tourism industry because it determines the first impression consumers have of a destination. Through visual impact, consumers can form a deep impression of the destination and create unique brand memories, thereby enhancing long-term loyalty. There is extensive research on visual marketing, with most existing studies focusing on its impact on consumer behavior and psychology. From social media updates to product displays, from advertising creativity to in-store experiences, excellent visual presentation has become an indispensable key element for brand image building,

value transmission, consumer connection, and ultimately driving conversions [16, 17]. It can be said that in today's marketing environment, 'visuals are information, visuals are experience, visuals are competitiveness.'

1.2. Technological Integration Drives The Upgrade of Tourism Visual Marketing

With the penetration of digital technology, the tourism industry is upgrading from 'standardized services' to 'personalized experiences'. Visual marketing, as a crucial factor influencing audience perception, information processing, and behavioral intentions [3], is increasingly used by marketers to reduce consumer boredom and enhance their engagement, thereby increasing traffic and stimulating purchasing desire [7]. The integration of artificial intelligence with visual marketing has become a significant trend in the digital age, with AI deeply and broadly integrating into every aspect of visual marketing. It provides intelligent solutions for the generation, dissemination, and interaction of visual information, and becomes the core driving force for reshaping its form and enhancing its effectiveness. With the rise of visual forms such as short videos, AR interactions, and immersive exhibitions, the industry is compelled to explore more precise and interactive marketing models.

In recent years, artificial intelligence technology has seen leapfrog development, especially in the field of computer vision, where algorithms centered on deep learning have continuously iterated [4], driving facial recognition and emotion recognition technologies from laboratory breakthroughs to industrial applications. In controlled environments, the accuracy of facial recognition has been significantly improved, enabling rapid identity verification and adaptation to complex lighting and multi-angle shooting scenarios; emotion recognition, through deep analysis of micro-expressions, can accurately identify over ten emotional states such as happiness, surprise, confusion, and fatigue [6], with reduced response times, providing technical support for real-time interaction. These technologies, with their precise perception capabilities of 'human' elements, offer new tools for the transformation of tourism visual marketing from 'spray-and-pray' to 'precise targeting'.

1.3. Research on Pain Points and Significance

The traditional models of visual marketing in tourism are currently facing multiple practical challenges, which directly restrict the industry's upgrading and iteration. In terms of content creation, there is a severe phenomenon of homogenization of marketing materials. Most scenic spots and hotels' promotional images still remain at the stage of stacking generic visual symbols such as 'blue skies and clear seas' and 'luxurious facilities' [18]. They fail to make precise designs targeting the aesthetic preferences and demand differences of different customer groups, leading to difficulties in reaching the deep psychological levels of the target audience. On the level of personalized service implementation, the problem of 'data fragmentation' is particularly prominent. Although some companies have accumulated visitors' consumption records, most of this data consists of static information (such as types of tickets purchased, number of accommodation days) and lacks real-time perception of the visitor's status. Faced with these pain points, facial recognition and facial emotion recognition technologies, although showing potential for breaking the deadlock, still have significant research gaps and practical controversies in their application status.

Therefore, this paper focuses on the application of artificial intelligence in tourism visual marketing, emphasizing the analysis of facial recognition technology and facial emotion recognition technology, exploring their forms of application in marketing scenarios, and examining the challenges these technologies bring. Through the results of this study, it can provide practical guidelines for tourism enterprises to formulate AI visual marketing strategies, helping them improve marketing effectiveness while balancing the application of technology and visitor rights, achieving sustainable development.

2. OVERVIEW OF ARTIFICIAL INTELLIGENCE TECHNOLOGY

2.1. Biometric Recognition Technology

Facial recognition technology is an intelligent system that can accurately locate and identify facial images in various environments to extract and analyze facial features. Its core operation involves comparing the facial feature data extracted from the image with pre-stored template features in the database, thereby achieving identity recognition and verification [2]. The fundamental principle of facial recognition technology relies on algorithmic matching of known individuals. Its uniqueness lies in the non-intrusive nature of facial biometric features, long-distance identification capability, and difficulty in replication and alteration. These attributes ensure not only high accuracy but also align with the rapid development needs of artificial intelligence and big data, making it play a significant role in numerous fields.

Broadly speaking, facial recognition includes the technologies related to building facial recognition systems [6]. It encompasses face detection, face localization, identity recognition, image preprocessing, among others [24]. Face detection algorithms identify the coordinates of all faces in an image. This involves scanning the entire image to determine whether candidate areas are faces. The output of face coordinates can be in the form of squares, rectangles, etc. Face localization refers to the coordinate positions of facial features within the face detection coordinate system. Deep learning frameworks have largely implemented some of the better localization techniques currently available. Compared to face detection, face localization algorithms require significantly less computation time. From the perspective of application layout for facial recognition technology, it is most widely used in attendance and access control [25], security, and the financial sector, while other fields such as logistics, retail, smartphones, transportation, education, real estate, government management, entertainment advertising, and cybersecurity [27] are also beginning to involve it. In the field of security, facial recognition technology can be used to issue warnings about suspicious situations and track suspects. This marks a significant advancement in artificial intelligence technology, indicating that we need more accurate, flexible, and faster recognition technologies [26].

2.2. Facial Emotion Recognition Technology

Facial emotion recognition (FER) technology combines computer vision and artificial intelligence to analyze facial features and patterns in face images or video sequences to infer and classify the emotional state of the subject [19, 20]. Currently, FER stands at the intersection of artificial intelligence and human psychology, representing a technology with numerous practical applications. In an era characterized by increasing human-machine interaction and the deep integration of AI into various aspects of our lives, the ability to discern and understand emotions conveyed through facial expressions has become crucial. FER is a technology that enables machines to interpret human emotions by analyzing facial features and expressions [21, 22], similar to giving computers the ability to 'read' human emotional states, reflecting how humans instinctively understand each other's feelings through facial cues.

Sharma et al. [5] conducted an in-depth study on Facial Expression Recognition (FER), involving advanced technologies such as deep learning for computer vision and pattern recognition. These technologies, combined with large datasets of facial emotion data, enable machines to decipher emotions like happiness, sadness, anger, surprise, fear, and disgust [1]. This creates a bridge for tourism marketing to understand tourists' true needs, transforming it from traditional 'one-way information push' to 'two-way dynamic interaction.' The integration of this technology with tourism marketing fundamentally converts tourists' implicit emotions into quantifiable data assets, providing scientific basis for marketing decisions.

3. THE APPLICATION OF ARTIFICIAL INTELLIGENCE FACIAL RECOGNITION TECHNOLOGY IN TOURISM VISUAL MARKETING

3.1. Enhancing Customer Experience

3.1.1. Personalized services

Facial recognition technology captures visitors' facial features and matches them with ticket purchase information, membership profiles, etc., in the database to quickly confirm identities and associate their historical preferences, providing an 'identity tag' for services; while facial emotion recognition technology relies on AI algorithms to analyze expression features and determine visitors' real-time emotions (such as joy, fatigue, confusion, etc.), serving as an 'emotional basis' for service adjustments. Together, they can integrate hardware and software in travel scenarios to deliver customized content.

During the admission process, facial recognition can quickly verify identities [8, 9] to provide consumers with a seamless experience and enhance security. Visitors do not need to present identification to enter; additionally, if the system detects that many visitors appear fatigued, the entrance display will push notifications about rest areas or electric vehicle routes, while for those showing excitement, it will push information about special activities. During the tour, the application of technology becomes more dynamic: when visitors stop at attractions, if their expressions show confusion, the smart guide screen will automatically play an analysis of key highlights; if families with children show signs of impatience from the kids, the device will switch to animated explanations or interactive games. In consumption scenarios, for vegetarians, restaurant electronic menus can highlight vegetarian options; when visitors hesitate over souvenirs, the system will push notifications about higher value alternatives. For emergency services, if the system detects that a visitor appears anxious and possibly lost, it will push navigation routes or alert staff to assist; for elderly visitors who seem tired, nearby displays will push warm messages about nearby service points offering tea and rest seats.

At the time of departure, if visitors are in a good mood, the system will send simplified surveys and promotional information. In the long run, the system aggregates emotional data throughout the journey and pushes targeted recommendations for similar attractions or notifications about new projects. However, the implementation of technology must prioritize privacy protection, clearly informing visitors and obtaining authorization, while encrypting stored data. Additionally, it is necessary to optimize recognition accuracy in complex scenarios to avoid the intrusive feeling caused by excessive intelligence, allowing visitors to turn off push notifications at their discretion. By using the dual dimensions of 'identity tags + emotional dynamics,' tourism services can upgrade from standardization to 'personalized experiences for each individual,' enhancing visitor experience while helping scenic areas reduce marketing costs, optimize service design, and achieve the effect of 'marketing as a service.'

3.1.2. Enhanced interactive experience

Facial emotion recognition technology can be applied to human-computer interaction and intelligent applications. By identifying users' psychological states and needs, intelligent systems can offer personalized interactions and services, meeting user demands and enhancing their experience [1]. This technology can be used by staff in tourist attractions to provide higher-level customer service. For example, facial recognition allows employees to quickly identify guests, even as they enter the park. High-definition cameras capture visitors' facial features, matching them with database information within seconds, enabling more personalized greetings, customized services, and tailored tour routes. If the attraction has a customer rewards program, members can upload a clear photo when registering their account. Facial recognition technology can immediately identify these members and alert staff via smart bracelets or mobile apps, offering them exclusive coupons, gifts, or special event invitations. The technology can also recognize repeat visitors by analyzing historical data, allowing

staff to understand their preferences and previous visit experiences, thus providing more thoughtful service and corresponding rewards, such as free drinks, priority entry, or souvenirs.

3.2. Optimize Marketing Strategies

3.2.1. Precise content recommendation and targeted reach

On online platforms such as travel apps or official websites, the synergy between facial recognition technology and facial emotion recognition technology can break through the limitations of traditional algorithms, enabling visual content recommendations to evolve from 'guessing user preferences' to 'understanding user emotions' for precise communication. The core logic involves a closed loop of 'real-time emotion capture - historical data correlation - dynamic content adaptation,' ensuring that every instance of visual content delivery aligns highly with users' current needs and preferences.

Once users authorize the activation of related features, the system captures their facial micro-expressions and physiological responses in real-time through the device's camera during browsing. For example, when a user scrolls to a video titled 'Trekking in Snow Mountains,' their pupils unconsciously dilate and their lips slightly curl upwards; the emotion recognition algorithm interprets this reaction as 'high interest.' Conversely, when a user quickly swipes past images of 'Senior Wellness Tourism' and their brows furrow slightly, the system marks it as 'low attention.' These real-time generated emotional data are instantly transmitted to the backend, where they are integrated with the user's historical behavior data linked via facial recognition. This includes destinations of 'Outdoor Adventures' collected over the past three months, tickets for 'High Altitude Scenic Areas' purchased on OTA platforms, and 'Extreme Sports' content liked on social media. By cross-referencing 'real-time emotions' with 'historical behaviors,' the system accurately identifies the user's current interests, such as 'current high interest in trekking in snow mountains compared to leisurely exploring ancient towns, with a preference for moderately challenging routes.'

Based on the aforementioned analysis results, the platform immediately adjusts the display logic for visual content dynamically. On the homepage, the originally rotating 'Water Towns of Jiangnan' images will switch to a 4K aerial video of 'Snow Mountain Sunrise,' and below the video, text guidance such as '3 Beginner-Friendly Snow Mountain Hiking Routes' will automatically pop up. In the 'Recommended for You' section, the system will prioritize arranging snow mountain-related products that include additional information like 'Hiking Gear Rental' and 'Guide Services,' using more impactful visual presentation methods. Additionally, this technology combination can also achieve cross-platform collaborative recommendations. For example, after a user shows strong interest in a 'Tropical Rainforest Adventure' video on a travel app, when the user switches to a social media platform, through cross-platform identity association via facial recognition (with user authorization), their feed will feature similar 'Rainforest Secrets' short video ads, and the visual style of the ads will continue the immersive first-person perspective that the user showed preference for on the travel app, thus forming a marketing loop from 'app seeding—social platform reinforcement—OTA platform conversion.' This ensures precise visual content continuously reaches users across multiple online scenarios, deepening their interest and ultimately improving the conversion efficiency from 'browsing' to 'booking.'

Traditional tourism marketing often leads to resource waste due to insufficient precision, but the integration of technology offers opportunities to reconstruct marketing logic and uncover users' potential consumption value. With the development of big data and artificial intelligence, travel companies can move away from broad-spectrum marketing and instead push content tailored to different tourists' preferences. This not only improves the conversion rate of existing products but also allows for the creation of new products that better meet market demands by deeply understanding user needs, thereby stimulating additional spending and boosting overall revenue.

3.2.2. Product development and improvement

During visual marketing, observing tourists and receiving feedback is crucial for marketers. This allows tourism professionals to adjust their marketing strategies in real-time. By utilizing facial recognition and emotion recognition technologies, products can shift from 'passively adapting' to 'actively matching' tourist needs. To understand customers, improve services, and optimize processes, scenic areas and other travel companies need to collect feedback and data. While the application of facial recognition technology may not be immediately obvious in these areas, it can be highly beneficial. The technology can be set up for market research purposes, helping scenic areas accurately determine the number of people at specific times and locations. Additionally, it can be used to analyze customers by reading their expressions to gauge their emotions or by analyzing their facial features to determine their age or gender. Most conveniently, this data can be automatically collected day or night.

For example, during the experience of a new project at a theme park, if most visitors show signs of frustration (such as frowning and frequently checking their watches) while waiting in line, the system can feedback this emotional data to the operations team for real-time records to facilitate future system upgrades. If visitors frown frequently and have wandering eyes while experiencing a cultural exhibition due to its obscure content, the emotion recognition data will indicate that 'the presentation method needs simplification,' which will then be pushed to the backend to drive product improvements, such as changing textual explanations to short animations or adding interactive Q&A sessions. Additionally, combining both methods can achieve 'niche demand mining': when facial recognition detects a specific niche group spending a long time at certain attractions with positive emotions (such as smiling and focused photography), products tailored to the current scene can be developed for them, transforming implicit needs into explicit products.

This technology-based product development model allows tourism enterprises to break away from 'empiricism' by using real emotional feedback and identity data to accurately assess the strengths and weaknesses of their products. For example, if a souvenir's outdated design leads to tourists showing a lack of interest, it can be upgraded to a personalized custom version that integrates the scenic area's IP; if a tour guide service's dull explanations confuse tourists, it can be optimized into an interactive Q&A format with a virtual guide. Ultimately, products, under the dual influence of 'identity tag-guided development direction + emotional data-driven detail improvement,' better meet the needs of different tourists, enhancing tourist experiences and making tourism marketing more persuasive with high-quality products, forming a positive cycle of 'product optimization - experience enhancement - marketing efficiency increase.' As tourists' demand for experiences becomes increasingly diverse, these two technologies offer opportunities for expanding the boundaries of tourism product experiences and the emergence of new business models. Tourism products are no longer limited to traditional sightseeing and accommodation forms but can incorporate more interactive and personalized elements, even giving rise to entirely new tourism formats such as 'emotion-customized virtual tours,' attracting various types of tourists and driving the expansion of the tourism market size.

3.3. Rebuild Service Reputation

One of the core competitive advantages in the tourism industry is service experience. The application of two technologies creates opportunities to enhance service reputation and form a differentiated advantage. When tourists feel the smoothness of the process during their travels (such as quick entry and convenient check-in) and the attentiveness of the service, it significantly improves their affinity for the brand, leading them to repeat purchases or recommend the brand to others. This positive reputation built through high-quality service allows tourism companies to stand out in homogeneous competition and capture a larger market share. Facial recognition simplifies processes such as entry and check-in, reducing visitor wait times. Facial emotion recognition captures visitors' emotional signals, helping service staff anticipate needs in advance. Together, they improve the service

experience and lay the foundation for realizing this opportunity. For example, at scenic area entrances, visitors only need to face the camera, completing identity verification within seconds without queuing. At hotel front desks, the system automatically identifies guest information, quickly processing check-in procedures, making guests feel efficient and convenient. Additionally, facial emotion recognition technology can analyze visitors' facial expressions in real-time. When visitors show signs of confusion or dissatisfaction, service staff can promptly approach to inquire and offer assistance, ensuring every visitor receives personalized care and service. These meticulous service measures not only enhance the overall visitor experience but also increase their loyalty and trust in.

4. CHALLENGE

4.1. Data Privacy Issues

Facial recognition systems rely on facial data input to generate large amounts of data. Database hacking attacks could jeopardize the data of thousands, or even millions, of people. Incidents of data theft from public databases have already occurred multiple times. Preventing data theft should be one of the top priorities when implementing facial recognition technology. Once user data is leaked, it remains exposed forever, posing a significant threat. If the issue is not resolved, the data may be misused for an extended period. The leakage of facial information databases can lead to a series of severe consequences, affecting not only personal privacy and security but also businesses and society as a whole. This information might be used to track and monitor individuals, both in real life and online.

In this era of information explosion, our data is easier to collect, analyze, and even misuse than ever before. From everyday online shopping to social media interactions, from using smart devices to registering for online services, personal information is unknowingly woven into a vast network. Data breaches occur frequently; in July 2022, hackers infiltrated the Neopets database and stole personal data from potentially 69 million users and 460MB of source code. The hackers accessed the database from January 3, 2022, to July 19, 2022, attempting to sell the data for four bitcoins. The stolen data included user personal information such as names, usernames, email addresses, IP addresses, gender, birth dates, Neopets PIN codes, hashed passwords, and information about their pets and gameplay [13]. Therefore, the secure storage and ethical use of facial recognition data will help alleviate major concerns regarding the use of facial recognition technology.

4.2. Technical Accuracy and Reliability

Although artificial intelligence technology continues to develop, there are still accuracy issues with facial and emotion recognition in complex environments. Studies analyzing the impact of age indicate that the biometric performance of children's faces is lower [10]. Research examining gender effects shows that the recognition performance of female faces is weaker than that of male faces [11]. Additionally, recent dynamic studies have found that when faced with the same racial, gender, and age bias factors, these impacts can cause facial recognition error rates to increase exponentially [12]. Emotion recognition is more susceptible to 'contextual confusion'; for example, a tourist squinting due to direct sunlight might be misinterpreted as being 'confused', and a brief laugh caused by a companion's joke might be mistaken for 'satisfaction' with marketing content. Such misinterpretations can lead to marketing decisions deviating from actual needs. Furthermore, the high concurrency characteristics of tourism scenarios (such as sudden surges in visitor flow during holidays) impose stringent requirements on system stability. If recognition delays or data transmission interruptions occur due to algorithm overload or hardware failure, it can not only cause congestion at critical points such as ticket gates and service counters but also erode tourists' trust in intelligent services due to 'technical failure', thereby amplifying negative experiences.

4.3. Social Ethical Issues

The widespread application of facial and emotion recognition technology has sparked a series of social ethical controversies. Firstly, businesses and merchants, driven by profit, may neglect ethical issues. The market has a strong demand for efficient, convenient, and low-cost artificial intelligence products and services, leading companies to potentially reduce investments in data privacy protection or adopt algorithms with potential biases to improve efficiency. Secondly, AI technologies such as facial recognition have strong capabilities in data collection and identification. In sectors like tourism marketing, when professionals collect user information for personalized recommendations, it may raise concerns about privacy leaks among users. Thirdly, the extensive use of facial recognition and other AI technologies leads to significant job displacement, causing social inequality and unemployment issues, making it an urgent ethical issue to balance technological progress with social fairness. Lastly, big data technology in commercial applications has led to price discrimination, such as 'big data price gouging,' which infringes on consumer rights and sparks public discussions on data transparency and fairness.

5. CONCLUSION

In summary, facial recognition and facial emotion recognition technologies in artificial intelligence have shown significant application value in the tourism visual marketing field by achieving personalized services, enhancing interactive experiences, optimizing marketing strategies, etc., bringing new opportunities for improving customer experience, increasing operational efficiency, enhancing market competitiveness, and innovating tourism products and services, driving the transformation of the tourism industry from standardized services to personalized experiences. However, during its application process, it also faces multiple challenges such as data privacy leakage risks, insufficient technical accuracy and reliability, and social ethical controversies. In the future, to address the challenges faced by facial recognition and emotion recognition technology in tourism visual marketing applications, systemic solutions can be constructed from multiple dimensions. In terms of data privacy protection, strict technical defenses and transparent user authorization should be at the core, using encryption algorithms and blockchain technology to strengthen the security barriers of facial information databases, while clearly informing tourists about the scope, purpose, and storage period of data collection, through simple and understandable interfaces allowing users to autonomously choose whether to enable the recognition function, ensuring that data is only used to enhance service experience and not leaked to third parties. Regarding technical accuracy issues, efforts should be made to optimize algorithm models and adapt to the characteristics of tourism scenarios, expanding the diversity of training datasets, including samples under different ages, genders, races, complex lighting conditions, and dynamic environments to reduce bias, developing lightweight recognition systems suitable for high-concurrency scenarios, and setting up manual review mechanisms at key nodes such as ticket checkpoints to avoid service disruptions due to technical errors. For social ethical controversies, a balanced mechanism considering both fairness and efficiency needs to be established, enterprises can establish ethics review teams to evaluate the rationality of technology applications, eliminate algorithmic discrimination and 'big data price gouging' phenomena, conduct employee skill training simultaneously when promoting technology to replace repetitive jobs to facilitate job transitions, and publicly disclose the basic logic of data usage and algorithm decision-making, ensuring tourists' right to know and supervise the service process, thereby maintaining user rights and social fairness while leveraging technological value.

REFERENCES

[1] Cong hui Li (2025). Research on the Application of Facial Recognition Technology in Intelligent Psychological Analysis. Shanxi electronic technology. 03: 95-97+110.

[2] ZhaoW, ChellappaR (2003), Face cognition: Al iterature survey, ACMC puting Surveys. 35(4).

[3] LinCao, Du Kangning, Guo Yanan (2021). Face recognition algorithms and case analysis. Beijing: Electronics Industry Press. 7, 1-10

[4] Yinghui Wang (2010). Face recognition: principles, methods, and technologies. Beijing: Science Press. 134(06), 96-99.

[5] Sharma, M., Anuradha, J., Manne, K.H., & Kashyap, C.S.G. (2017). Using deep learning for facial detection. IOP Conference Series: Materials Science and Engineering. 263(4), 42-92.

[6] Xingyu W (2024). Research on Facial Emotion Recognition Technology Based on Convolutional Neural Networks. Dalian Jiao Tong University. 134(06), 78-95.

[7] Mondol. E.P, Salman. N.A, Rahid.A. O, etal (2021). The impact of visual marketing on consumers' purchasing intentions in fashion retail stores. International Academic Journal of Business and Social Sciences.11, 7-18.

[8] Purahong, B., Chutchavong, V., Aoyama, H., and Pintavirooj, C. (2020). Mixed facial features and their applications in face recognition. Mobile multimedia magazine. 16(1–2), 245–266.

[9] Kortli, Yassin, Maher Jridi, Ayman AlFalou, and Mohamed Atri (2020). Face Recognition Systems: ASurvey. 20, 2-342.

[10] N. Srinivas, K. Ricanek, D. Michalski, D.S. Bolme, and M. King, Facial (2019). Algorithm bias: Performance differences on images of children and adults. Computer Vision and Pattern Recognition Workshop.6, 2269–2277.

[11] R. Vera-Rodríguez, M. Blázquez, A. Morales, E. Gonzalez-Sosa, J.C. Neves, and H. Proença (2019). Utilizing gender information in facial recognition systems using deep convolutional neural networks. Computer Vision and Pattern Recognition Workshop.6, 2254–2260.

[12] J.J. Howard, Y.B. Sirotin, and A.R. Vemury (2019). The impact of broad and specific population homogeneity on the distribution of disguise rate and false match rate in facial recognition algorithm performance. Biometric theory and application systems. 9:1–8.

[13] Lei Zhu. (2021). Reflection striggered by a facial recognition dispute incident. Traffic management.11, 24-60.

[14] Liu, S.F., Liu, H.H., Chang, J.H., and Chou, H.N. (2019). Analysis of a new visual marketing craze: the effect of LINE sticker features and user characteristics on download willingness and product purchase intention. Asia Pacific Manage.24, 263–277.

[15] Huang, J., Wang, J., Liu, H., and Wang, Z. (2020). Visual marketing and consumer behavior. Sci. Decision Making. 4: 67–89.

[16] Pauluzzo, R., and Mason, M.C. (2022). Amulti-dimensional view of consumer value to explain socially-responsible consumer behavior: a fuzzy-setan alysis of Generation Y's fast-fashion consumers. J.Market. Theor. Prac. 30, 191–212.

[17] Sample, K.L., Hagtvedt, H., and Brasel, S.A. (2020). Components of visual perception in marketing contexts: a conceptual frame work and review. J.Acad. Market. Sci. 48, 405–421.

[18] Zhang ting (2025). Current Status and Optimization Strategies for Book Short Video Marketing in the New Media Era. The world of public relations. 12, 28-30.

[19] Lihuiyin (2025). Research on the development and application of facial recognition technology in video images. Electronic Design Engineering. 29(05), 164-168.

[20] Wang Fuping, Wang Dingsha, Li Ou, Liu Weihua, and Liu Hongwei (2025). An occlusion face recognition algorithm based on fine-grained deep feature masking estimation. Journal of Xi'an Jiao Tong University. 59(02), 170-179.

[21] Zhou Weiliang (2025). Analysis of tourist emotions on the G217 National Highway using facial expression recognition technology. Journal of Yunnan Minzu University (Natural Sciences Edition). 22:1-13.

[22] Zhang Jie Mei & Zhang Zi Wei. (2023). How does visual marketing stimulate the purchasing intention of viewers in travel e-commerce live broadcasts?. Economic and Management Review, 39(05), 138-149.

[23] Chen Jiyang and Zou Qianqian. (2021). A Comparative Study on the Impact of Sensory Marketing on Consumer Loyalty in Agricultural Tourism: An Empirical Analysis Based on the Experience of Fujian Tea Tourism Marketing. Fujian tea, 43, (10), 89-90.

[24] LIL, MUX, LIS, (2020). A Review of Face Recognition Technology [J/OL]. IEEE Access, 8:139110-139120.

[25] V.S. Manjula and L.D.S.S. Baboo (2012). Using an image database, facial recognition, identification, and tracking are performed through the PRDIT algorithm for criminal investigations. Int.J. Comput.38, 40-46.

[26] K. Lander, V. Bruce, and M. Bindemann (2018), Utilizing individual-difference-based facial recognition fundamental research: Impacts on criminal investigations and security. Cognit. Res., Princ. Implications, vol.3, no.1, pp.113, Dec.2018.

[27] Y. Hu, H. An, Y. Guo, C. Zhang, T. Zhang, and L. Ye (2010), The development status and prospects on the face recognition, inProc.4th Int. Conf. Bioinf. Biomed. Eng., Jun.2010, pp.14.

[28] Zhang, J., and Zhang, S. (2023). How does visual marketing evoke the purchase intention of live broadcast viewers in travel e-commerce? Econ. Manage. 39, 138–149.

[29] Yu, H., Xie, Y., and Chen, X. (2018). Visual marketing eye movement research: review and outlook. Foreign Econ. Manage. 40, 98–124.