



The Application of Artificial Intelligence in Tourist Characteristic Town

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Abstract. The use of AI is necessary for many tourist destinations to remain competitive and attract visitors. Augmented reality (AR) is a cutting-edge technology that is increasingly being used in public Spaces. In order to investigate the needs of tourists for AR application in the process of tourism, the main tourist attractions in Hainan were investigated in depth, and the results were analyzed through subject classification. The survey results suggest that while AI technologies such as virtual reality and augmented reality have passed the hype stage, they are on the verge of being applied in the tourism industry. This topic will discuss the importance of AR and other technologies to tourism research and practice, and try to explore recommendations for further research.

Keywords: Artificial intelligence · Augmented reality · Travel · Characteristic town

1 Introduction

Since tourists are interested in the environment in general, using augmented reality has the potential to create the next generation of computerized travel guides. According to the study, the user interface should not only be able to pinpoint the user's location, but also provide background information about areas of possible interest. The idea has sparked interest in tourism as a mobile utility. Such applications are constantly being modified to improve efficiency. The city of Sanya offers a travel guide app that navigates users to certain locations and provides location-based information about nearby locations, which you can choose from. As such, it is multi-user friendly, allowing various users to share information while supporting the use of social networking platforms. Some people believe that this is a big challenge for tourism destinations that lack sufficient funds. As of 2013, most smartphones offer GPS Map-based navigation systems that can pinpoint the user's exact location [1]. Mobile phones have access to the latest content, have the flexibility to transfer text, images and video data, and can provide other information on map-based systems [2]. However, these applications are still evolving because they have very limited functionality and do not allow multiple users to use them simultaneously. The current implementation of AR in the tourism industry lacks effective user participation. In addition, it is not fully developed and contains many bugs that need to be improved before it can be made available to users. Another challenge is the acceptance and adoption of such devices, as many tourists still prefer traditional resources, such as travel books and other media resources (Table 1).

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Table 1. Comparison between tourism characteristic towns and mature tourism projects

Content of contrast	The characteristic town of domestic tourism	Mature domestic tourism projects	The result of comparison
Travel books	Characteristic towns are still immature, and there are few related tourism guides or books, with relatively innovative style, younger object-oriented style and novel writing form	Domestic mature tourism projects related to tourism books, comprehensive information, easy to understand, covering all ages and writing in a variety of forms	Different
Newspaper, radio, Traditional media, etc.	Limited by geographical location, newspapers, leaflets and other traditional media information types are relatively few, but more distinctive	Tickets, leaflets and other promotional materials are huge in quantity, illustrated and rich in variety	Different
AR experience	With clear practicality and increasing number of users, it has great potential in the future and will become the mainstream technology of tourism	The proportion is larger, the number of users is larger, and the supporting facilities are gradually improved	Different
Other media	Other resources, such as APP, Wechat official account and other We-media resources, are often used, but the resources are relatively single	Other resources, such as Wechat official account, Wechat Twitter, Meituan, honeycomb travel and other apps, are widely used, with a wide variety, good quantity and quality	Different

2 Application of AR in Tourism

Historic attractions such as the Ancient Zhou Ya and Dongpo Academy in Sanya are attractions in themselves. It is clear that the number of tourists interested in the ancient city of cultural heritage is steadily increasing, affecting the living standards of residents and the visitor experience (Table 2). Technology has been seen as a tool to support the development and competitiveness of many tourist destinations [3]. However, augmented reality is still considered a new technology in the travel industry that needs more in-depth research to enhance the visitor experience [4]. Therefore, it is significant to investigate the needs of tourists when AR travel apps are implemented in tourist cities like Sanya.

Table 2. Tourist reception number of Guzhou Ya and Dongpo Academy in Yazhou District, Sanya in recent 5 years

	2017	2018	2019	2020	2021
The ancient state official in Yazhou District of Sanya City	878,000	1,100,000	1,267,000	875,000	1,506,000
Dongpo Academy	499,000	573,000	653,000	741,000	984,000

Table 3. Usage of ten social platforms

Social software brands	user score	Voting list (tickets)	Pay attention to list(tickets)	List of power	Share the list(tickets)	Thumb up list(tickets)
Wechat	9.9	Wechat 5126	Quora 30535	OICQ	Wechat 6954	Wechat 6754
OICQ	9.7	Quora 4795	Wechat 26042	Qzone	Douyin 6770	Bili 6379
Douyin	9.4	MicroBlog 2296	Douyin 25907	MicroBlog	OICQ 5978	Quora 5212
MicroBlog	9.2	Douyin 1356	Bili 24045	Wechat	Facebook 5776	Douyin 5012
Kwai	9.0	Douban 1514	MOMO 23051	Kwai	MicroBlog 5220	Kwai 4322
Quora	9.0	Little Red Booklittle 1722	Kwai 16649	Douban	Bili 5011	Little Red Booklittle 3441
Bili	8.6	Kwai 1443	Little Red Booklittle 14513	Bili	Little Red Booklittle 4970	Douban 2891
Qzone	8.6	Baidu Post 1078	OICQ 13321	Quora	Douban 3970	OICQ 2775
Little Red Booklittle	8.2	Qzone 955	Facebook 12612	Little Red Booklittle	Quora 3776	Facebook 2775
Douban	8.2	Tianya Club 900	Douban 10547	Tianya Club	Qzone 3500	MicroBlog 2576

3 User Requirements in a Mobile Computing Environment

Since AUGMENTED reality is still considered a new technology and has not been extensively studied, user needs in software and mobile computing environments were identified from previous studies [5]. In the questionnaire, users asked for the interface to be easy to understand and beautiful in design. Second, information loading difficulties

are thought to be caused by the application's speed and shortened response and load times. Therefore, it is recommended to control the size of the application to facilitate the installation process. At the same time, security issues cannot be ignored and privacy should always be a priority. Social features are one of the emerging themes, and as more and more people are exposed to social networking platforms such as wechat and Douyin, such social networks and comments are becoming increasingly important (Table 3). In addition, when people are under more time pressure, another key theme is saving time effectively. Mobile software needs to be more efficient and convenient to attract users. Finally, ease of use is a key topic that will enable users to use mobile applications without having to go through a learning process [6].

4 Research Methodology

Due to the lack of research in this field, an inductive research method in the form of in-depth interviews was selected to suit this part of the research. Questionnaire questions are designed based on user needs identified in mobile and computing environments. The population comes from some domestic and international tourists who visit Sanya and even hainan Island. After a critical survey of the literature on AR technology for tourism, as well as previously identified user needs in mobile and computing environments, up to 36 in-depth interviews were conducted to conduct qualitative studies in specific tourist towns. According to the 2020 Report of hainan Tourism Administration, the main market segments of Sanya in Hainan were considered, with samples coming from Haichang Dream Ocean City that Never Sleeps, Atlantis, Xidao Ocean Culture Tourism Zone, Mangrove International Convention and Exhibition Center and Eternal Love Scenic area. The interview was conducted in two times, and samples were taken from different scenic spots. Despite attempts to target gender ratios, 70% of participants were women and only 30% were men, most of whom were students and young professionals who frequently travelled short distances during the year (Fig. 1). 65% of the sample were young visitors aged between 22 and 30, while 19% were aged 21, 8% were aged between 31 and 40, and 8% were aged between 41 and 50 (Fig. 2). The study was conducted over two weekends in April and June at two separate downtown hotels. A total of 36 tourist visits were made using street stops. The respondents were screened and a wide variety of demographic information was sought. Participants are invited to participate in 40-min research interviews in hotel lobbies and dedicated conference rooms. Two pilot visits were conducted prior to the visitor visit to test access issues, make modifications if necessary, and reorganize recording equipment. The first interview took place in a conference room at the Mangrove International Convention and Exhibition Center, which provides a great location for passing visitors. However, since most of the tourists were passing by, it was difficult to attract volunteers to participate in the street, so the second meeting was held in the gathering square located in the Dream Ocean City that never sleeps in Haichang. Each interview was transcribed verbatim to serve as a tangible source of data analysis. For the purposes of this study, subject analysis techniques were used to analyze and interpret the raw data collected through interviews following the study of recurring themes in a mobile environment.

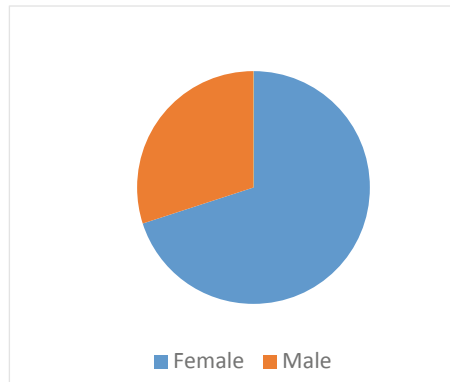


Fig. 1. Survey sample sex ratio

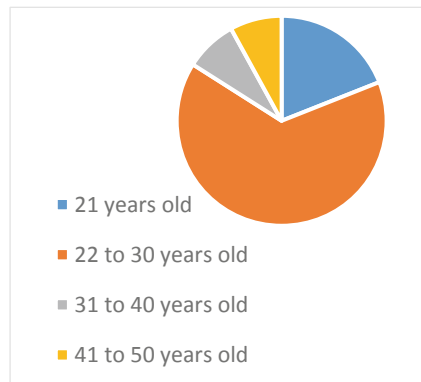


Fig. 2. Survey the age distribution of the sample (Photo credit: Original)

5 The Study Found

Respondents ranged in age from 21 to 50, with most participants aged 22 to 30. But 70% of the participants were women and only 30% were men, most of them students and young professionals who often travel short distances. Meanwhile, it was discovered that most visitors had never encountered augmented reality and were unaware of its existence or any AR apps. In addition, most travelers found other people's reviews and preferences very helpful in the decision-making process of deciding which attractions to visit or where to eat. Many travelers suggested linking AR travel apps to established and widely accepted social networking platforms, such as Wechat and Douyin.

Since most respondents use the Amap application on a daily basis, it is recommended that the application include a map of the destination that is easy to navigate and pinpoint the location. One common approach is to link your application to Google Maps. Alternatively, navigation can be set up through the camera lens and display virtual arrows and route directions that overlay the real environment. In addition, the accuracy of the app is an issue, as many visitors have negative experiences with GPS accuracy on their

mobile devices. The emergence of internationalization will inevitably require multilingual performance of the application, but many visitors currently find that it does not support English applications and can filter symbols and names and translate them into the relevant native language, so AR is seen as a potential technology to achieve this capability.

6 Conclusion

Based on these findings, it can be seen that convenient navigation through the proper implementation of GPS is a new theme. In addition, multilingualism and internationalization are key indicators of the development of the global market. Travel is no longer a luxury activity, and the number of travelers is rapidly expanding internationally, which makes a lot of sense for apps that offer services in a variety of languages. Meanwhile, security is a key theme. As people access various open online platforms, privacy issues will still be monitored, and users' acceptance and willingness to access remains unclear. Overall, AR is still a very young technology. This study puts forward several key meanings of AR in the application of tourism characteristic towns. First, visitors need up-to-date sources of information related to the time frame of the area. Second, the popularity of social networks among tourists should encourage repeated use in travel AR applications. Third, user interface design and ease of navigation are key factors for continuous application utilization. Finally, multilingual features and the speed of applications are repeatedly mentioned as important factors in travel applications that can be marketed and ensure long-term growth.

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