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Network Evaluation and Analysis of Popular Scenic Spots in Xi'an City based on Crawler Technology

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Abstract: With the development of tourism in Xi 'an in recent years and the gradual end of the epidemic, it is particularly important to analyze the evaluation of popular scenic spots in Xi' an. This article by the octopus collector climbs ctrip in December 2022-July 2023, xi 'an ten popular attractions evaluation data, can get visitors in the time range of the evaluation of various attractions, and then use ROST CM6 analysis technology will comment data emotion analysis, local xi' an tourism after the outbreak of the recovery.

Keywords: Network Crawler; Network Evaluation; Xi'an Tourism; Ctrip; ROST CM6; Emotion Analysis.

1. Introduction

1.1. Research Background

With the improvement of people's living standard and the change of tourism concept, tourism is booming, and more and more people choose to obtain tourism information through the Internet, including the evaluation of scenic spots. Tourist reviews and evaluations play an important role in tourism decision-making. Therefore, it is very important to analyze these network evaluations.

Traditional data collection methods mainly rely on manual collection, which is time and time consuming and prone to subjective errors. The crawler technology can automatically obtain a large number of scenic spot evaluation data from the Internet, and efficiently collate and analyze these data, so as to conduct network evaluation and analysis for popular scenic spots. The analysis of the online evaluation of popular scenic spots can provide tourists with more accurate and comprehensive tourism information, help tourists to make more accurate and reliable tourism plans, and improve the quality of their tourism experience.

1.2. Review of Domestic and Foreign Studies

Visualization Analysis of Tourist Attractions Based on Social Media Data -- Take Famous Scenic spots in Xi 'an as an example [1]: This study uses relevant information about famous scenic spots in Xi' an on-crawler tool media, and analyzes the points of interest, interest and evaluation of scenic spots through data visualization technology.

Research on Online reputation Analysis of Tourist attractions Based on Internet Crawler Technology [2]: This research uses crawler technology to obtain a large number of online comments of scenic spots from multiple tourist websites, and reveals the reputation and factors of different scenic spots through text mining and cluster analysis.

Mining Tourist Reviews to Unveil Local Experiences [3]. A Study on Destination Image Analysis: The study used crawler technology to collect tourist comment data on different destinations from multiple travel websites, and used the analysis of the relationship between destination image and tourist experience.

Sentiment Analysis of TripAdvisor Reviews [4]. The Case of Spanish Hotels: The study used crawler technology to collect review data from Spanish hotels on the TripAdvisor website, and studied the association between hotel service quality and user satisfaction through disanalysis and topic modeling.

A Review of Online Reputation Management [5]: Geographic Context, CorePrinciples, and Stakeholder Priorities: The review article synthesizes research results worldwide and introduces online reputation management methods based on crawler technology, including data collection, emotion analysis, and application fields.

These domestic and foreign studies are committed to using the crawler technology to analyze the network evaluation of popular points, reveal the reputation characteristics of scenic spots, user satisfaction and improvement suggestions, and provide decision support and reference for scenic spot management and tourism development. At the same time, these studies also provide for further exploration of the scenic spot network evaluation and analysis. This paper will use ROST CM6 software to analyze and display the evaluation data of tourist attractions in Xi'an extracted from Ctrip.

2. Data Source

Taking the top ten scenic spots in Xi'an as an example, this paper analyzes and studies the evaluation data, so as to grasp the heat recovery of these top ten scenic spots after the epidemic, so as to give tourists more accurate guidance. The scenic spots selected in this paper include Daming Palace National Heritage Park, Tang City that never sleeps, Tang Furong Garden, Huaqing Palace, Hui People Street, Qin Shihuang Mausoleum Museum (Terracotta Warriors and Horses), Xi 'an Forest of Steles Museum, Xi' an City Wall, Xi'an Bell Tower, and Zhongnan Mountain-South Wutai Scenic Spot. In this paper, the tourist review data of the top ten scenic spots in Xi'an collected on the octopus collector, from December 2022 to July 2023, and analyzed using ROST CM6 software. Through the specialized analysis and the overall comparative analysis of each scenic spot, tourists can intuitively get the recovery status of each scenic spot through the data analysis results.

3. Introduction of the Data Acquisition Software and the Data Analysis Software

3.1. Octopus Fish Collector

Octopus collector is a powerful network data collection tool, which is mainly used in web page data collection, competitor monitoring and public opinion monitoring. By configuring the acquisition rules and URL, users can automatically obtain the web content, pictures, links and other information, and conduct data analysis and processing. It provides customized configuration and flexible data export function, which can meet the different needs of users, and is suitable for the data collection needs of individual users and specialized users.

3.2. ROST CM6

ROST CM6 It is a free social computing platform to help the humanities and social science research. In the review analysis of scenic spots, it provides data collection and processing, text mining, sentiment analysis and other functions. Landscape managers can use these functions to collect and process comment data, understand the evaluation and needs of tourists, find problems and highlights, and make corresponding decisions and improvement measures. ROST CM6 Provide comprehensive comment and analysis services for scenic spot managers, optimize the operation of scenic spots and improve the service quality.

4. Attractions Analysis

4.1. Daming Palace National Heritage Park

Table 1. Emotional analysis of tourist evaluation in Daming Palace National Relics Park

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	29.65	67
Positive mood	67.26	moderate	18.14	41
		altitude	19.47	44
Neutral mood	16.37			37
		same as	12.83	29
Negative emotions	16.37	moderate	3.10	7
		altitude	0.44	1

As can be seen from Table 1, positive tourists in Daming Palace National Heritage Park accounted for 67.26%, neutral emotions accounted for 16.37%, and negative emotions accounted for 16.37%. Although the tourists are mainly positive emotions, there are many neutral emotions and negative emotions.

4.2. Datang Nthe City Never Night

As can be seen from Table 2, the evaluation of tourists in Datang sleepless City is relatively extreme, and the emotional distribution is mainly positive, followed by negativity and few neutral emotions. The main reason is that the flow of people is too large, too crowded will make a considerable number of tourists bored.

Table 2. Emotional analysis of tourist evaluation in Datang Night City

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	24.34	55
Positive mood	66.81	moderate	22.12	50
		altitude	20.35	46
Neutral mood	9.29			21
		same as	15.04	34
Negative emotions	23.89	moderate	6.64	15
		altitude	0.88	2

4.3. Datang Lotus Garden

Table 3. Emotional analysis of tourist evaluation in Datang Furong Garden

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
Positive mood		same as	34.47	534
	72.37	moderate	19.56	303
Neutral mood		altitude	18.33	284
	12.98			201
Negative emotions		same as	10.72	166
	14.65	moderate	2.78	43
		altitude	0.45	7

As can be seen from Table 3, the positive mood of tourists towards the Datang Lotus Garden exceeds 70%, the main reason is its tickets, scenery, photos, performances, etc., which can understand the main reasons for the high positive mood of tourists towards the Datang Lotus Garden.

4.4. Huaqing Palace

Table 4. Emotional analysis of tourists in Huaqing Palace

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	35.37	208
Positive mood	65.48	moderate	16.84	99
		altitude	13.27	78
Neutral mood	19.05			112
		same as	10.71	63
Negative emotions	15.48	moderate	3.91	23
		altitude	0.17	1

As can be seen from Table 4, the positive emotions of tourists to Huaqing Palace accounted for 65.48%, but the proportion of neutral emotions and positive emotions was relatively similar. The main reason for the tourists' positive mood towards Huaqing Palace is that the tour guide explains the song of everlasting hate and its related historical background.

4.5. Hui People Street

According to Table 5, the positive attitude of tourists towards Hui Min Street exceeded 75%, but the negative mood exceeded 15%. It shows that tourists are satisfied with the food and price of Hui Street, and tourists have negative emotions about the number of shops in Hui Street.

Table 5. Emotional analysis of tourists in Huimin Street

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	24.10	40
Positive mood	75.90	moderate	25.90	43
		altitude	25.90	43
Neutral mood	9.04			15
		same as	11.45	19
Negative emotions	15.06	moderate	3.01	5
		altitude	0.00	0

4.6. The Mausoleum Museum of Emperor Qin Shihuang (Terracotta Warriors)

Table 6. Emotional analysis of tourists

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
Positive mood	77.51	same as	33.38	987
		moderate	23.77	703
Neutral mood	13.16	altitude	20.36	602
				389
Negative emotions	9.33	same as	6.56	194
		moderate	2.20	65
		altitude	0.20	6

As can be seen from Table 6, the positive attitude of tourists towards the terracotta warriors is 77.51%, and the negative mood is less than 10%, which can get tourists' strong interest in the historical and cultural interests of the terracotta warriors.

4.7. Xi'an Forest of Steles Museum

Table 7. Emotional analysis of tourists in xi'an Forest of Steles Museum

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	30.16	184
Positive mood	78.03	moderate	24.10	147
		altitude	23.77	145
Neutral mood	13.28			81
		same as	6.39	39
Negative emotions	8.69	moderate	1.64	10
		altitude	0.00	0

As can be seen from Table 7, the positive attitude of tourists towards the Xi'an Forest of Steles Museum reached 78.03%, indicating that the museum has improved the historical knowledge reserve of tourists to a corresponding extent.

4.8. Xi'an City Wall

Table 8. Emotional analysis of Xi 'an City Wall tourists' evaluation

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	35.46	1039
Positive mood	69.59	moderate	20.72	607
		altitude	13.41	393
Neutral mood	17.61			516
		same as	9.56	280
Negative emotions	12.80	moderate	2.39	70
		altitude	0.31	9

As can be seen from Table 8, the positive attitude of tourists towards xi'an city wall reached 69.59%, and there were a lot of local tourists and local people punching in for fitness.

4.9. Xi'an Bell Tower

Table 9. Emotional analysis of Xi'an City Wall

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	32.48	279
Positive mood	66.01	moderate	21.07	181
		altitude	12.46	107
Neutral mood	22.24			191
		same as	8.96	77
Negative emotions	11.76	moderate	2.44	21
		altitude	0.00	0

As can be seen from Table 9, the positive attitude of tourists towards Xi'an Bell Tower reached 66.01%, but the negative mood exceeded 10%.

4.10.Zhongnan Mountain South Wutai Scenic Spot

Table 10. Emotional analysis of tourist evaluation in South Wutai Scenic Spot of Zhongnan Mountain

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	32.73	36
Positive mood	75.45	moderate	20.00	22
		altitude	22.73	25
Neutral mood	10.91			12
		same as	9.09	10
Negative emotions	13.64	moderate	4.55	5
		altitude	0.00	0

As can be seen from Table 10, although tourists have few comments on the scenic spot, the positive mood reached 75.45% in the only comments. Zhongnan Mountain South Wutai scenic spot is a Buddhist holy land, can crawl or drive to the top and so on.

4.11.Overall Analysis

Table 11. Overall emotion analysis of the top ten scenic spots in Xi'an

sentiment analysis	scale (%)	intensity	scale (%)	Quantity (article)
		same as	33.18	3312
Positive mood	72.27	moderate	21.67	2163
		altitude	17.42	1739
Neutral mood	15.23			1520
		same as	9.10	908
Negative emotions	12.50	moderate	2.62	262
		altitude	0.25	25

As can be seen from Table 11, the proportion of positive emotions for the top ten popular scenic spots in Xi'an is very high, but the negative emotions are more than 10%, indicating that the heat recovery of scenic spots needs to be improved and improved after the epidemic.

Table 12. Overall word frequency analysis of the top ten scenic spots in Xi'an

ranking	vocabulary	frequency	ranking	vocabulary	frequency	ranking	vocabulary	frequency
1	explain	1607	23	pretty	284	45	enthusiasm	213
2	Xi'an	1518	24	be worth	284	46	fit	204
3	wall	1389	25	bell tower	282	47	route	203
4	cicerone	1375	26	hour	281	48	arrange	197
5	history	981	27	grand sight	275	49	feel happy	195
6	Terra-Cotta Warriors	736	28	visit	272	50	go up	188
7	be worth	728	29	perform	264	51	patience	188
8	serve	585	30	good-looking	264	52	well	184
9	practice	573	31	It's worth	259	53	ancient	182
10	scenery	563	32	tour	257	54	daytime	172
11	DATANG	461	33	perform	241	55	miracle	172
12	culture	454	34	night scene	236	56	garden	170
13	entrance	432	35	habitat	236	57	journey	167
14	evening	424	36	visitor	234	58	stone	167
15	scenic spot	366	37	scenery	232	59	next time	166
16	convenient	361	38	manner	232	60	careful	164
17	shake	360	39	satisfied	230	61	tour	163
18	museum	349	40	picture	230	62	detailed	161
19	bicycle	330	41	expostor	226	63	super	159
20	performance	326	42	amuse	223	64	knowledge	156
21	child	321	43	park	218	65	lights	153
22	propose	291	44	building	215	66	above	152

Table 12 The ranking of the keywords that appear the most frequently in the travel reviews of tourists after the epidemic directly shows the popularity of the city wall, the terracotta warriors, and the city of the frequency of "explanation" and "tour guide"; the key words of "worth visiting" and "good" can show the love for the ten popular scenic spots in Xi'an.

5. Conclusion

From the number of Ctrip travel reviews, people also pay high attention to the tourist attractions in Xi'an. However, from the emotional analysis and word frequency analysis of comments, we can get that there are more negative emotional keywords in the comments of each scenic spot, indicating that the corresponding tourist spot system is not perfect after the epidemic, and the recovery of heat still needs to be improved.

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