International Journal of Data Science

ISSN online: 2053-082X - ISSN print: 2053-0811
https://www.inderscience.com/ijds

Design of intelligent management system for tourist attractions based on IoT information technology

Xiaohu Shen

DOI: 10.1504/IJDS.2025.10072979

Article History:

Received:	15 May 2025
Last revised:	17 July 2025
Accepted:	23 July 2025
Published online:	16 January 2026

Design of intelligent management system for tourist attractions based on IoT information technology

Xiaohu Shen

Business School,
Nantong Institute of Technology,
Nantong, 226002, Jiangsu, China
Email: shenxh@ntit.edu.cn

Abstract: With the rapid growth of tourism, traditional scenic area management struggles to meet increasing demands. This paper proposes an intelligent management system for tourist attractions based on Internet of Things (IoT) technology to optimise crowd control, enhance service quality, and improve visitor satisfaction. By integrating IoT with cloud and edge computing, the system enables real-time monitoring, efficient flow allocation, and personalised services. Experimental results show tourist satisfaction rose from 58% to 83% after implementation. The system also improves attraction capacity and operational efficiency, demonstrating the potential of IoT in smart tourism. The study highlights the synergy between information devices and mobile applications, offering a reference for future intelligent scenic area development.

Keywords: tourism industry; intelligent management system; IoT; Internet of Things; scenic area management; service quality; tourist satisfaction; cloud computing; edge computing; mobile application.

Reference to this paper should be made as follows: Shen, X. (2025) 'Design of intelligent management system for tourist attractions based on IoT information technology', *Int. J. Data Science*, Vol. 10, No. 7, pp.242–255.

Biographical notes: Xiaohu Shen received his Master's degree from Yangzhou University, China. Now, he works in School of Commercial, Nantong Institute of Technology. His research interest includes computational intelligence, information security and big data analysis.

1 Introduction

With the development of the global economy and the improvement of people's living standards, tourism has become one of the important ways for the public to relax and have fun. The diversification and convenience of travel methods have prompted people to travel no longer limited to the surrounding areas but to further and more diverse destinations. At the same time, tourist attractions are facing the pressure of a sharp increase in the number of tourists, which has challenged the traditional management model of scenic spots. Although many scenic spots have made improvements in service facilities, such as setting up automatic drinking water points, tour guide services, public

rest areas, and dining areas, they are still insufficient in efficiently managing tourist flow and improving service quality.

In recent years, many scholars have put forward their research on optimising the management and service level of scenic spots. Muhammedrisaevna et al. (2020) investigated the role of information technology in tourism management. On this basis, the industrial components related to tourism are closely related to each other. All these can regard tourism as a highly integrated service, and make the application of information technology in organisation and management more affordable. Li et al. (2019) compared different prediction methods. The results showed that, compared with other prediction models, the adoption of the Fruit Fly Optimisation Algorithm (FOA) method containing network search data can achieve higher accuracy in peak seasons, which is a sustainable means to solve tourism management problems by more accurately predicting the tourism demand of scenic spots. Li et al. (2020) proposed a data mining technology of DA-HKRVM algorithm based on Dragonfly Algorithm (DA) and applied it to the hybrid kernel relief vector machine (HKRVM) model to predict passenger flow from the dimension of space-time distribution. By feeding the forecast results back to the staff of tourist attractions in real-time, the distribution scale of passenger flow can be effectively controlled, to achieve the goal of a balanced distribution of tourism resources, which further promotes the development of smart tourism. Liao (2020) proposed a hot spot analysis method based on trajectory stop point spatial clustering. He studied the DBS CAN (density-based spatial clustering of applications with noise) algorithm, which plays a very important role in intelligent service and emergency management of scenic spots. Although the smart management of scenic spots has made progress to a certain extent, there are still some deficiencies in the timeliness of information transmission and the relevance between people and scenic spots, which need to be supplemented and corrected by subsequent research.

To further optimise and analyse the intelligent management of scenic spots, some experts conducted a correlation study on the Internet of Things (IoT) technology and intelligent management of scenic spots. Wang et al. (2020) outlined the 5G for intelligent tourism and the IoT system supported by artificial intelligence. Efficient data transmission based on 5G technology and intelligent data processing based on AI technology are of great significance for unlocking intelligent tourism applications based on the IoT. Tripathy et al. (2018) introduced a feasible solution based on the IoT, called iTour, which is a framework for independent tourists to move. In this process, the difficulties in measures and lessons were analysed, and the possible role of the IoT was explored. Shen et al. (2020) focused on tourist attractions and aimed to explore how intelligent technologies affect customer journeys. The main research question was how intelligent technology affects the tourist experience. Yang and Han (2020) extended the theory of cultural heritage and provided a practical guide for the digital information management of cultural landscapes. The workflow of establishing a cultural landscape geographic database can be used as a reference for heritage projects in China and other countries.

This paper is dedicated to exploring the design and application of intelligent management systems for tourist attractions by introducing IoT information technology to meet the challenges currently faced by scenic spot management. The contributions of the study are as follows: first, we propose an innovative smart scenic spot management model, which not only integrates multiple advanced technologies such as cloud computing, edge computing, fog computing, and MIST computing but also emphasises

the interconnection between information devices and mobile software, providing personalised services for tourists while optimising the configuration and utilisation efficiency of scenic spot resources. Secondly, through actual cases, it is verified that the intelligent management system based on the IoT can significantly improve tourist satisfaction and service quality. Experimental data show that tourist satisfaction has increased from 58% to 83%, and the maximum passenger flow of scenic spots has also increased significantly. Finally, this study provides new ideas and methods for the development of smart tourism in the future, especially in terms of how to use modern information technology to enhance tourist experience and promote the sustainable use of tourism resources, and proposes solutions with practical significance. These contributions have jointly promoted the progress of the field of smart tourism and demonstrated the great potential of IoT technology in improving the management level of scenic spots.

2 Design of intelligent management system for tourist attractions

2.1 Demand for smart management in scenic spots

Along with taking care of their requirements, individuals have gradually shifted their focus to entertainment as the per capita economic level has increased. The tourism business is growing at an accelerating rate, and the number of visitors to many picturesque locations is skyrocketing. The load of tourists in some scenic spots is close to the limit. In terms of management and operation, many scenic spot staff often receive complaints from tourists. To propose a reasonable solution to similar problems, many local leaders have proposed intelligent and intelligent management plans for scenic spots. A reasonable planning of tourist attractions and tourists through modern technology can deploy the contradictions between tourist attractions and tourists, and integrate the resources owned by tourist attractions with information technology. Through the management system, the resources of tourist attractions are more suitable for the needs of tourists, and the interest in tourist attractions and the tourist experience are maximised (Almaimoni et al., 2018; Peng and Huang, 2017).

Through analysing the situation of scenic spot management, it is found that the following points are very important for intelligent scenic spot management:

1 *Intelligence*

As a new way to manage scenic spots, it combines cloud computing, IoT technology, virtual reality technology, and other cutting-edge high-tech technologies in management, and promotes the process of highly information-based tourism. The combination of modern information technology and the traditional tourism industry with innovative thinking has improved the comprehensive service level of tourist attractions, and improved the wisdom and modernisation of scenic spot management, to fully tap the potential of tourist attractions to receive tourists and lick the bricks for the local economy (Dewi et al., 2022; Wijayanti and Damanik, 2019).

2 *Personalisation*

Smart management of scenic spots is not simply a mixture of new technologies such as cloud computing and the IoT, nor is it the use of the above new technologies to show

modern wisdom. Instead, it is a personalised upgrade of new technologies based on various technologies, to improve the reception quality of scenic spots (Wang et al., 2024; Napitupulu et al., 2021). The intelligent management of tourist attractions does not just follow the general trend but should combine the characteristics of each scenic spot to develop and utilise high-tech, to maximise its effectiveness. When designing the management plan, it is necessary to use the tools rationally by the designer's original intention.

3 *Comprehensive*

The traditional scenic area information equipment pays too much attention to the massive laying of information equipment in the park but does not play its role and act on tourists. Even if a large number of relevant and convenient information equipment are installed in tourist attractions, tourists would not know the existence of the equipment because of poor information, which would cause a waste of resources and would not improve the actual benefits. At this time, information equipment and mobile software should be combined to achieve the interconnection of equipment, which is also a manifestation of intelligent informatisation. It is necessary not only to take into account the information construction of the scenic area itself but also to estimate that the interaction with tourists would truly bring the concept of intelligent management into the scenic area (Li et al., 2024; Mustelier-Puig et al., 2018).

4 *Targeted*

At present, tourist attractions that have been installed with relevant smart informatisation lack connectivity in various regions. Even if the system in each region is perfect, intelligent management cannot be truly achieved. In this mode, the ecology of tourist attractions is too independent to feel the integrity and internal mobility of tourist attractions. It seems that the system is perfect, but the internal rigidity lacks communication. The real intelligent management of scenic spots requires that each region should establish an interconnected relationship between regions while improving the information equipment system, to realise the sharing of scenic resources and improve the service efficiency of each module. In this way, the long-term stability of operations in the scenic area can be ensured. In addition, the intelligent ecological environment of tourist attractions should also be established, to truly bring tourists a highly intelligent experience in tourist attractions (Moyer et al., 2025; Akan et al., 2025).

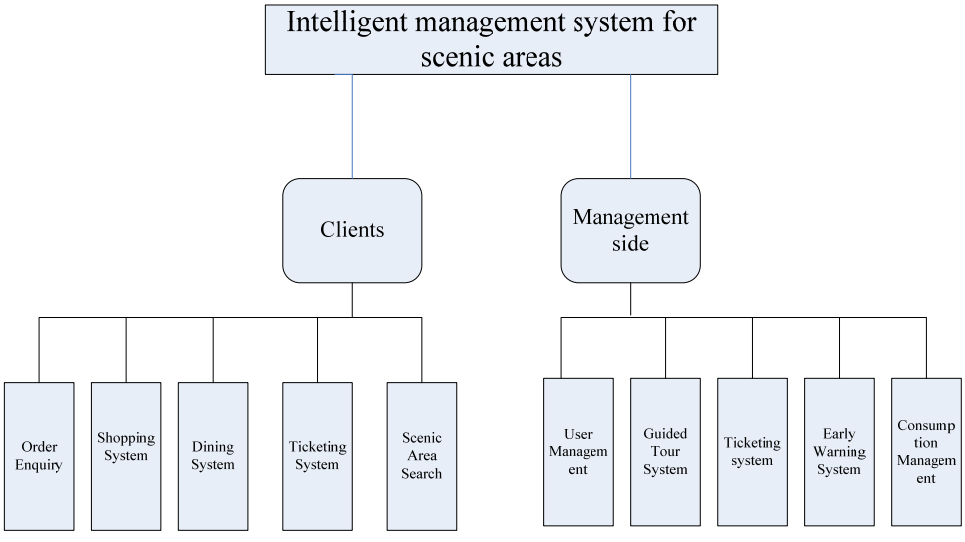
Establishing a pertinent product-service industry chain based on regional tourism ecological features was the first goal of the tourism intelligent management system. The tourist experience has been optimised through clever management, which, in turn, maximises all of the needs of visitors in the picturesque area, thereby boosting the local tourism industry. The conceptual presentation of the intelligent management mode in this paper is shown in Figure 1.

2.2 Design of intelligent management system for scenic spots based on the IoT

The design of the intelligent management system of tourist attractions in this paper focuses on IoT information technology and is based on the intelligent management of the IoT scenic spots for overall control. The purpose of the IoT is to connect all things. Based on the expansion and extension of the Internet, it combines various information uploaded

by users with network algorithms to form a huge concept. As long as it can be connected to it, the interconnection between people and the data cloud can be realised at any time or place (Zhao et al., 2024; Li et al., 2023).

Figure 1 Conceptual map of scenic spot smart management system (see online version for colours)



To process and analyse the data uploaded to the data cloud in real-time, there are currently four algorithms in the IoT: cloud computing, edge computing, fog computing, and MIST (Mathematics Informatics Science and Technology) computing. Cloud computing can share hardware resources through the Internet's database, realise large-scale data joint computing and service integration, and provide strong background support for scenic spots; edge computing focuses on quickly responding to local needs through smart terminals, reducing data transmission delays, and using sensors for machine learning to optimise user experience; fog computing uses local servers to process and analyse data, reducing the burden on the cloud and improving data processing efficiency, which is particularly suitable for scenarios that require a real-time response; MIST computing, as a supplement to fog computing and edge computing, further optimises the overall performance of the system by simplifying the distribution of computing tasks among IoT devices (Dang et al., 2019; Shu and Wang, 2024).

1 *Cloud computing*

The generation of cloud computing is based on the Internet. It shares hardware resources through the database of the Internet and jointly calculates the uploaded data. While users upload data to use cloud computing, their own devices would also participate in cloud computing to serve other users. Therefore, cloud computing can be understood as a service model that integrates all users using cloud computing into one. It regards the underlying users of the Internet as an abstract whole and can obtain relevant data from this abstract data pool for use when users need it (Chen and Wu, 2024; Zhang, 2024).

2 *Edge computing*

The basic logic of edge computing is a new computing model based on intelligent terminals, with cloud computing as the core and network communication as the computing approach. The IoT is good at capturing small responses, and edge computing can use sensors for machine learning, which is an application based on basic servers. Amazon and other business giants have applied edge node computing to improve user relevance, which makes related work very simple.

3 *Fog calculation*

Compared with the previous two algorithms, fog computing is different in that it uses a local server to process and analyse data, rather than uploading data to the cloud for processing. The implementation of a fog network is very difficult, and it requires a certain understanding of various knowledge before the complete design of the network. The completion of a fog computing project requires a large team and support from many aspects, so the design would be limited by relevant businesses.

4 *MIST calculation*

MIST computing model complements fog computing and edge computing models to optimise their performance. This computing model can introduce IoT devices and allocate computing tasks in a simple way.

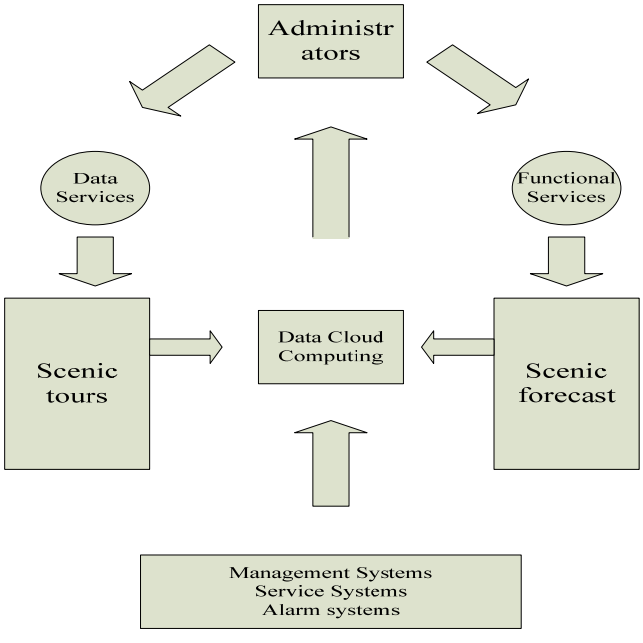
Under the premise of traditional scenic spot management, there is often a problem of insufficient information transmission or poor information. Although the scenic area has a complete set of supporting tourism construction, its location and specific information are difficult for tourists to perceive. Such information differences would lead to the waste of scenic area construction resources and a decline in tourist experience. Therefore, if the scenic area wants to design intelligent management of the scenic area on the premise of improving the customer experience, it needs to take into account the pertinence and intelligence of information. The goal is to promote consumption projects tailored to different user groups, optimising resource allocation based on their spending potential. According to the above characteristics, the intelligent management system of scenic spots discussed in this paper was designed in combination with cloud computing of the IoT.

To carry out intelligent distribution and management of tourist attractions, it is necessary to first predict the number of tourists and import the data model of each region of tourist attractions. The maximum number of tourists that each scenic spot can afford is uploaded to the data cloud, and then the maximum number of tourists on that day is used to guide tourists to tourist attractions that can meet their needs. Through the guidance and diversion of personnel gathering, accidents can be prevented and the tourist experience can be optimised. The management model established in this paper is shown in Figure 2.

First, it is predicted by the cloud computing model of the IoT. By predicting the maximum number of passengers on the day, the data can be obtained and reported to the various departments of the scenic area to prepare for it. As the main body of the tourist attractions system, tourists take the tourism system as the platform to obtain service information in the tourism process and provide personalised information services. Therefore, in the process of database design, it is necessary to pay attention to the data design of the six major tourism elements to accurately obtain information on the needs of tourists, to provide tourists with personalised services. The second thing to note is the use

of scenic clients. Java Server Pages (JSP) technology can be used to call the data package to open the park map of tourist attractions to spread out the location of each scenic spot for users to view, and the map can be freely zoomed in and out for tourists to view details. The characteristics of multiple media can also be integrated into the scenic area for comprehensive coverage, weather characteristics, and surrounding service facilities. Users can know the general situation of tourist attractions, the query of urban traffic information, the catering and entertainment information in tourist attractions, the booking of hotels, bars, and other entertainment places in tourist attractions, order viewing, order management, and other operations in advance. In the tourist attractions booking function module, users can register members to understand tourist attractions ticket booking through the tourist attractions management system and generate orders. The client can link to WeChat, Alipay, etc. for payment operations.

Figure 2 The smart management model of the scenic area (see online version for colours)



To predict the number of tourists in the scenic area for management, this paper introduces the DA algorithm to calculate the number of tourists in the scenic area. DA algorithm is an optimisation algorithm, that simulates the principle of a dragonfly individual avoiding collision to design the formulas. The formulas are as follows:

The algorithm updates the position vector as:

$$Z_i = -\sum_{j=1}^{N} Y - Y_j \tag{1}$$

In the case of pairing, the change of position vector is:

$$B_i = \frac{-\sum_{j=1}^{N} V_j}{N} \tag{2}$$

Among them, V_j is the speed of the *j*th adjacent dragonfly.

The location vector update strategy for aggregation behaviour is:

$$C_i = \frac{-\sum_{j=1}^{N} Y_j}{N} - Y \tag{3}$$

The position vector updating strategies of foraging behaviour are:

$$F_i = Y^+ - Y \tag{4}$$

$$E_i = Y^- - Y \tag{5}$$

Based on the above behaviours, it is concluded that the motion vector updating strategy of dragonfly individuals is:

$$\Delta Y_{t+1} = \left(zZ_i + bB_i + cC_i + fF_i + eE_i\right) + w\Delta Y_t \tag{6}$$

According to formula (6), the tourists' action logic is predicted by substituting the tourist parameters of tourist attractions, so that tourist attractions information can be pushed through the APP.

3 Verification of the impact of IoT information technology on scenic spot management

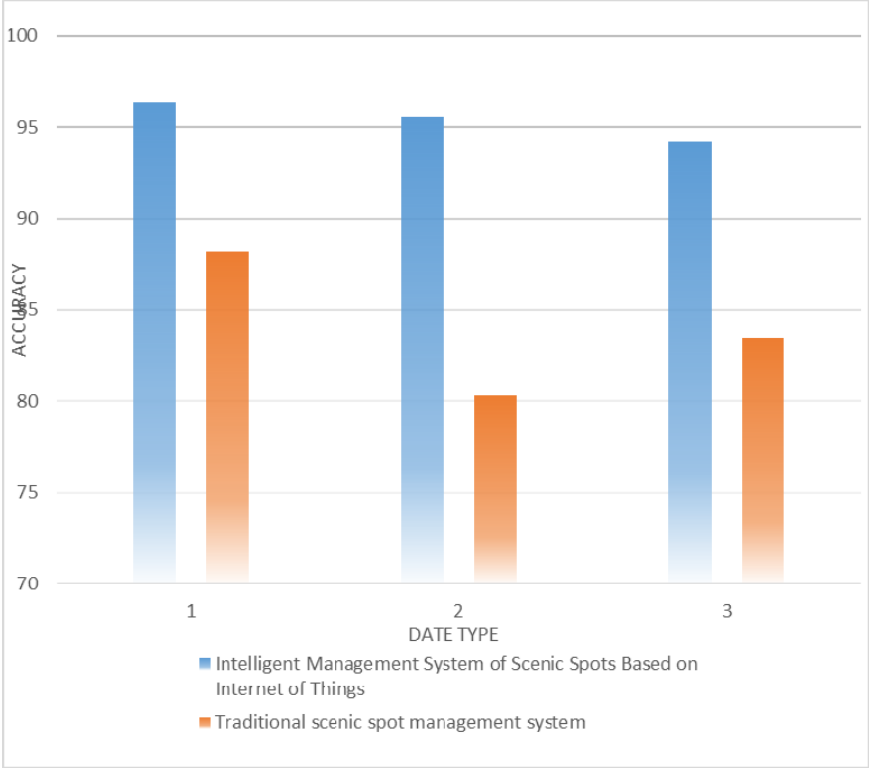
An experiment was carried out right away to see if the intelligent management system of picturesque locations created in this study had a favourable impact on inbound tourism. By comparing data, it was possible to see how the IoT-based intelligent system affected the advantages of visitor welcome at tourist destinations. The three aspects' indicators were counted experimentally, and the resulting experimental data was examined and illustrated. The experimental strategy was carried out in this experiment from a certain picturesque location. The number of tourists was estimated, and a corresponding welcome plan was created after the management staff of the scenic region gave their approval. The intelligent management of the scenic area was then implemented utilising the techniques outlined in this paper. After collating the methods, data surveys were conducted on various indicators of the scenic area: the accuracy of the forecast of the number of tourists, the revenue of the scenic area, and the satisfaction of tourists. After obtaining the visualised data, this paper demonstrated and analysed them separately to identify their association with scenic area management.

1 *Forecast of the number of tourists*

Reasonable prediction of the number of tourists in the scenic area is of great significance to the scenic area management system. Predicting the number of tourists in the scenic area one quarter in advance can effectively prevent the confusion of scenic area management caused by the imbalance of support distribution. Different guided travel plans should be created based on the anticipated number of visitors, and the resources of tourist attractions should be used sparingly to optimise resource use. Following the trial, Figure 3 displays the predictions made by the two management system groups regarding

the flow of visitors to the same quarter's tourist attractions. According to the observation of Figure 3, the prediction accuracy of tourist attractions management system based on the IoT was 96.36%, 95.56%, and 94.22% respectively. It can be observed from Figure 3 that compared with the traditional scenic spot management system, the intelligent management system designed based on IoT cloud computing has obvious advantages; the prediction accuracy rate has been significantly improved, which is conducive to tourist attractions making a reasonable operation plan for the upcoming tourist surge. This not only improves the efficiency of scenic spot management but also reduces the loss of economic benefits of tourist attractions due to the inability to cope with unexpected numbers of tourists or brings a bad tourism experience to tourists.

Figure 3 Accuracy of tourist volume prediction (see online version for colours)



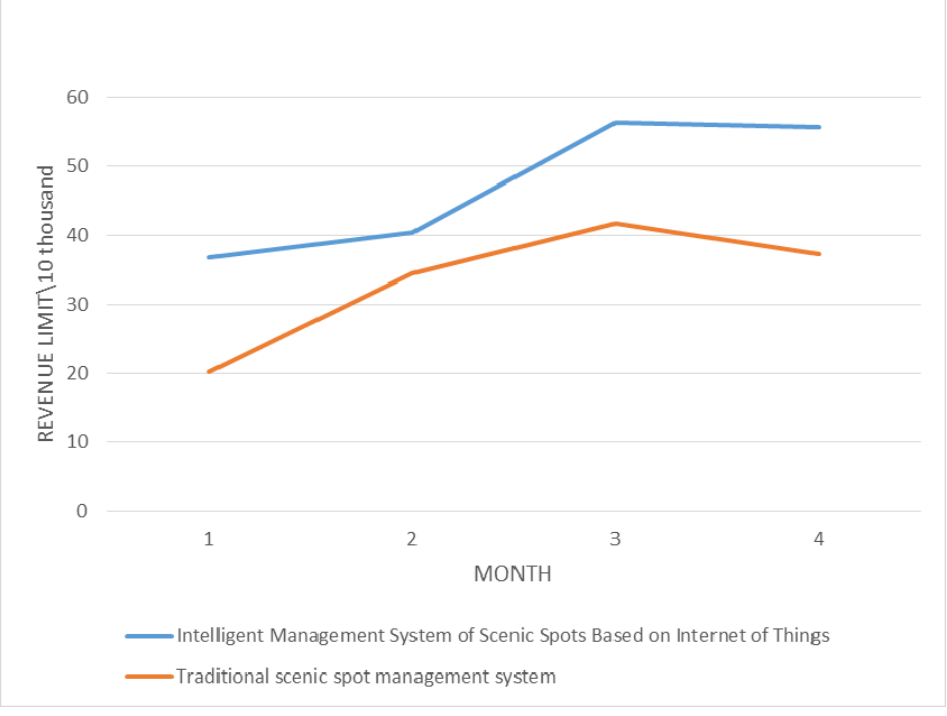
2 *Revenue of the famous scenic spots*

The quarterly revenue of famous scenic spots often reflects the quality of the work of tourist attractions and is often used to evaluate the performance. Therefore, this experiment also took the monthly revenue of tourist attractions as one of the criteria to judge the management quality of famous scenic spots. The revenue of tourist attractions can fluctuate greatly depending on how well-known picturesque locations are managed. Thus, the revenue from tourist attractions in January and April was compared in this experiment. Figure 4 displays the statistical findings. The IoT-based scenic area management system suggested in this paper is shown by the blue line, while the orange

line shows the scenic area's monthly revenue from the previous year's traditional management system.

According to the broken line trend, it can be found that the revenue from January to April had a significant upward trend. The revenue of the management system based on IoT cloud computing from January to April was 367 thousand, 403 thousand, 563 thousand, and 556 thousand respectively, and the revenue of the traditional management system last year was 201 thousand, 344 thousand, 416 thousand and 373 thousand respectively. Revenue can reflect customer flow to a certain extent. The rising trend of both broken lines showed that the intelligent management system of scenic spots based on the IoT can better meet the requirements of tourists and guide consumption when the customer flow is similar.

Figure 4 Growth curve of the scenic area's revenue quota (see online version for colours)

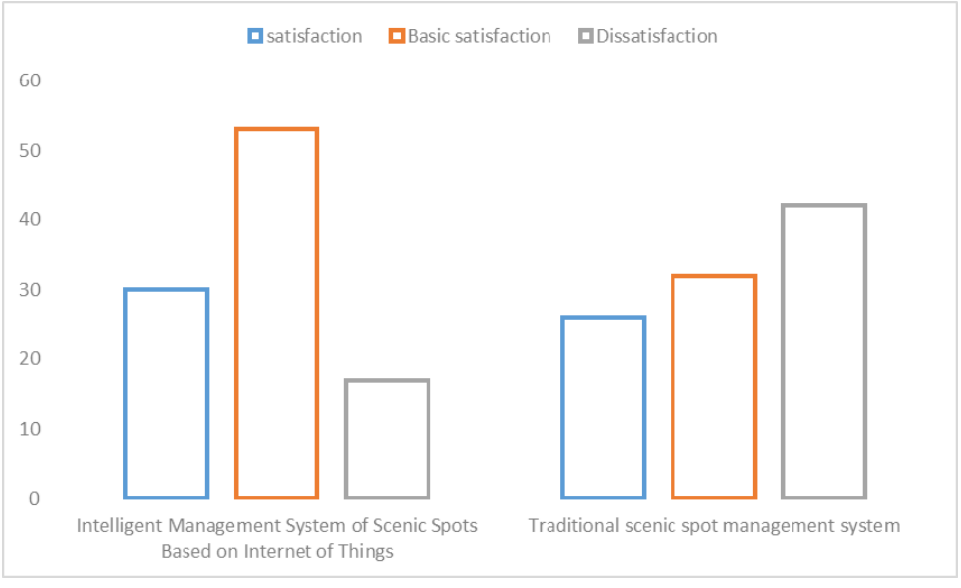


3 *Tourist satisfaction*

The income of scenic spots is closely related to the current quarterly passenger flow, and tourists' satisfaction with scenic spot management services can directly reflect the advantages and disadvantages of scenic spot managers' formulation methods. As the service of scenic spots, the experience of target tourists should be put first. Tourists have good comments on tourist attractions, which would also form positive communication among the crowd, to attract more tourists to further improve the benefits of tourist attractions. Therefore, this experiment investigated the satisfaction of tourists in scenic spots. The experiment collected data from two regions respectively. One region implemented the management of smart scenic spots based on the IoT, while the other region still used the traditional way of management. A random sample survey was

conducted among 100 tourists and their satisfaction with each region was asked. The tourists who have only visited one park were removed. The results are shown in Figure 5. Among the 100 people surveyed, 83 were satisfied with the management of scenic spots based on the IoT. In this paper, the ratio between the number of people with satisfactory attitudes and the number of people with basic satisfactory attitudes, and the total number of people was regarded as satisfaction, and the satisfaction rate reached 83%. On the other hand, only 58 people were satisfied with the management of traditional scenic spots, which meant that nearly half of the tourists were not satisfied with the service in this way. Therefore, it can be concluded that the intelligent management of scenic spots based on the IoT can improve the effect of tourists' experience and scenic area wind assessment, which is conducive to the development and construction of the ecological strategy of scenic spots.

Figure 5 Survey of tourist satisfaction (see online version for colours)



4 Conclusions

Based on the information technology of the IoT, this paper designs a set of intelligent management systems for tourist attractions, aiming to solve the problem of mismatch between the increase in the number of tourists and the service quality in the current scenic area management. Through the integrated application of advanced technologies such as cloud computing, edge computing, fog computing, and MIST computing, the effective management of scenic area resources and the optimisation of tourist experience are realised. The experimental results show that the system not only significantly improves the satisfaction of tourists from the original 58% to 83%. In addition, through the study of scenic area income, it is found that after the implementation of the new intelligent management system, the monthly income of the scenic area has increased significantly, showing the potential of the system in promoting the economic benefits of

the scenic area. Nevertheless, the intelligent management scheme proposed in this study still has a large room for optimisation, and future work should focus on further improving the operability and cost-effectiveness of the system. It is worth noting that with the continuous development and improvement of IoT technology, the intelligent management system will bring more possibilities and opportunities to the tourism industry. Through continuous exploration and practice, it can be foreseen that these technologies will further promote the development of smart tourism, maximise the utilisation of tourism resources, and continuously improve service quality.

Funding

This work was financially supported by Xin yingyun e-commerce operation laboratory (XQPT003) and Business Administration first class built subject of Jiangsu province in 14th Five-Year (SJYH2022-2/285) and Nantong Institute of Technology "New Quality Productivity Development Research Team" Construction Special Project (KCTD011) and Research Team Project of Nantong Institute of Technology Business School "Innovation of Hotel Digital Services" (NSKT2025-03) and Business School of Nantong Institute of Technology Course Group "Tourism Destination Management" (NSK2025-20) and National Business Education Research "14th Five Year Plan" 2025 Annual Project "Research on Cultivating Innovative Literacy of Hotel Management Talents under the Background of Digital Transformation" (SKJYKT-205010).

Conflicts of interest

All authors declare that they have no conflicts of interest.

Data availability statement

No/Not applicable (this manuscript does not report data generation or analysis).

Ethical statement

Not Applicable.

References

Akan, O., Verma, A. and Sharma, S. (2025) 'Prediction of customer churn risk with advanced machine learning methods', *International Journal of Data Science*, Vol. 10, No. 1, pp.70–95, https://doi.org/10.1504/Ijds.2025.144832

Almaimoni, H., Altuwaijri, N. and Asiry, F. (2018) 'Developing and implementing WEB-based online destination information management system for tourism', *International Journal of Applied Engineering Research*, Vol. 13, No. 10, pp.7541–7550.

Chen, N. and Wu, Y. (2024) 'The evaluation of college students' entrepreneurship education performance using the t-test method', *International Journal of Data Science*, Vol. 9, No. 2, pp.173–182, https://doi.org/10.1504/IJDS.2024.139709

Dang, L.M., Piran, M.J. and Han, D. (2019) 'A survey on internet of things and cloud computing for healthcare', *Electronics*, Vol. 8, No. 7, pp.768–768.

Dewi, L., Wibisono, G. and Ba'mar, T. (2022) 'Post Covid-19 Tourist attraction management strategy in Kampoeng Bisnis Tegal Waru', *International Journal of Economics, Management, Business, and Social Science (IJEMBIS)*, Vol. 2, No. 3, pp.499–505.

Li, D., Deng, L. and Cai, Z. (2020) 'Statistical analysis of tourist flow in tourist spots based on big data platform and DA-HKRVM algorithms', *Personal and Ubiquitous Computing*, Vol. 24, No. 1, pp.87–101.

Li, H., Wu, H., Jiang, D., Liu, J. and Wang, K. (2023) 'Application of information technology in OBE teaching reform: a case study of teaching discrete mathematics for computer science major', *International Journal of Management and Organization*, Vol. 1, No. 1, pp.1–13, DOI: 10.30209/Ijmo.202312_1(1).0001.

Li, K., Lu, W. and Liang, C. (2019) 'Intelligence in tourism management: a hybrid FOA-BP method on daily tourism demand forecasting with web search data', *Mathematics*, Vol. 7, No. 6, pp.531–531.

Li, P., Peng, X., Zhang, C. and Baležentis, T. (2024) 'Financial cycle with text information embedding based on LDA measurement and nowcasting', *Journal of Organizational and End User Computing*, Vol. 36, No. 1, pp.1–25.

Liao, Y. (2020) 'Hot spot analysis of tourist attractions based on stay point spatial clustering', *Journal of Information Processing Systems*, Vol. 16, No. 4, pp.750–759.

Moyer, A.C., Young, I.I.W.A. and Haase, T.J. (2025) 'Self-evolving data collection through analytics and business intelligence to predict the price of cryptocurrency', *International Journal of Data Science*, Vol. 10, No. 1, pp.1–26, https://doi.org/10.1504/IJDS.2025.144833

Muhammedrisaevna, T.M., Mubinovna, R.F. and Kizi, M.N.U. (2020) 'The role of information technology in organization and management in tourism', *Academy*, Vol. 4, No. 55, pp.34–35.

Mustelier-Puig, L.C., Anjum, A. and Ming, X. (2018) 'Interaction quality and satisfaction: an empirical study of international tourists when buying shanghai tourist attraction services', *Cogent Business and Management*, Vol. 5, No. 1, pp.1470890–1470890.

Napitupulu, J., Pramono, R. and Saragih, E.L.L. (2021) 'Determinants of tourist attraction of the heritage tourism', *Journal of Environmental Management and Tourism*, Vol. 12, No. 2, pp.507–514.

Peng, X. and Huang, Z. (2017) 'A novel popular tourist attraction discovering approach based on geo-tagged social media big data', *ISPRS International Journal of Geo-Information*, Vol. 6, No. 7, pp.216–216.

Shen, S., Sotiriadis, M. and Zhang, Y. (2020) 'The influence of smart technologies on customer journey in tourist attractions within the smart tourism management framework', *Sustainability*, Vol. 12, No. 10, pp.4157–4157.

Shu, Y. and Wang, W. (2024) 'Innovative research on encryption and protection of e-commerce with big data analysis', *International Journal of Data Science*, Vol. 9, No. 2, pp.123–142, https://doi.org/10.1504/Ijds.2024.139805

Tripathy, A.K., Tripathy, P.K. and Ray, N.K. (2018) 'iTour: the future of smart tourism: an IoT framework for the independent mobility of tourists in smart cities', *IEEE Consumer Electronics Magazine*, Vol. 7, No. 3, pp.32–37.

Wang, W., Kumar, N. and Chen, J. (2020) 'Realizing the potential of the internet of things for smart tourism with 5G and AI', *IEEE Network*, Vol. 34, No. 6, pp.295–301.

Wang, X., Hu, H., Wang, Y. and Wang, Z. (2024) 'IoT real-time production monitoring and automated process transformation in smart manufacturing', *Journal of Organizational and End User Computing*, Vol. 36, No. 1, pp.1–25.

Wijayanti, A. and Damanik, J. (2019) 'Analysis of the tourist experience of management of a heritage tourism product: case study of the sultan palace of Yogyakarta, Indonesia', *Journal of Heritage Tourism*, Vol. 14, No. 2, pp.166–177.

Yang, C. and Han, F. (2020) 'A digital information system for cultural landscapes: the case of slender west lake scenic area in Yangzhou, China', *Built Heritage*, Vol. 4, No. 1, pp.1–14.

Zhang, Z. (2024) 'Deep analysis of time series data for smart grid startup strategies: a transformer-LSTM-PSO model approach', *Journal of Management Science and Operations*, Vol. 2, No. 3, pp.16–43, https://doi.org/10.30210/JMSO.202402.008

Zhao, L., Deng, B., Wu, L., Liu, C., Guo, M. and Guo, Y. (2024) 'Deep reinforcement learning for adaptive stock trading: tackling inconsistent information and dynamic decision environments', *Journal of Organizational and End User Computing*, Vol. 36, No. 1, pp.1–27.