

# Survey on Museum Environment Using Interactive Guide System

M.Saranya, Ms J.Shanthalakshmi Revathy

Student, Dept. of Computer Science and Engineering, Velammal college of Engineering Technology, Madurai. India.

Professor, Dept. of Computer Science and Engineering, Velammal college of Engineering Technology, Madurai. India.

**Abstract-** Mobile phone has become a part of the personalized computing. Nowadays everyone has a strong loyalty to use these devices. Personalization helps users to identifying his intentions, and trends about a specific area. In the life-long learning activities, museums have interested to provide information from ancient history to modern ages. This viewpoint emphasizes the importance and role of the museums and their accessibility. By using mobile learning platform and its features, we can share information about the museums not only with audio guides about art objects but also the location of the museums and places located in the Environment. Also, interactive tools can provide interfaces for users to access some art Objects which located in a specific museum by help of the mobile solutions.

**Keywords:** mobile learning, positioning technique, interactive guides.

## I.INTRODUCTION

The goal of this survey is to get knowledge museum guides that will provide information about museum , using smart mobile devices and many other interactive tools, the system is designed to provide museum guide information services; therefore, people can get museum guidance information that they need anytime and anywhere.

In the beginning of the 2000's, tourist guides or museum guides need to develop specific devices to provide information about art objects, finding a location about an art gallery, and providing detailed information about a particular art object. But now, rapidly increasing mobile phone market provides smarter phones that have abilities to access any portal by using Internet or executing specific software tools to push or pull some important information.

In this study, mobile devices are used for creating a mobile museum guide for exhibition contexts to improve the visiting experience, increase learning, and satisfying interests. In this survey, it will be described as location-based application, named mobile museum guide for the mobile platform. This application will permit users to get museum guidance information when they need anytime and anywhere

Mobile learning (m-learning) come into the modern's life and becoming a popular way in learning. Mobile learning has a lot of advantages in following aspects such as portability, interactive, easy to operate, and Targeted users. So, it attracted a large number of learners. In this situation, the information in Mobile Learning becomes more and more. It makes the Artificial Intelligence (AI) in mobile learning more and more important. It is necessary to research on it.

The 21st century is the time of knowledge-based economy. With the development of the educational idea on the lifelong learning, the request of community to the individual's knowledge structure and knowledge level will be getting higher and higher. Personal knowledge management is also becoming more and more important. In order to obtain reliable and effective information quickly and accurately, transform unstructured information into knowledge and pass it to those who need it at an appropriate time, it is necessary to apply artificial intelligence to personal knowledge management. We can eliminate manual search of information, classification, acquisition and indexing to realize the Personal knowledge management automation at a certain degree by using intelligent tools.

## II ARTIFICIAL INTELLIGENCE CONCEPT INVOLVING IN MUSEUM GUIDES

### A. Application of Artificial Intelligence

The artificial intelligence in mobile learning includes concepts,

- Mobile Intelligent Teaching Expert System (MITES).
- Mobile Intelligent Decision Support System (MIDSS).
- Mobile Intelligent Information Retrieval Engine (MIIRE).
- Mobile Intelligent Induct-learning System (MTIS).
- Intelligent Hardware Network (IHN).

In the application of artificial intelligence the main problem is Due to the high cost of wireless Internet access, the average consumer does not have the opportunity to access the Internet. This is to a large extent hampered the enthusiasm of end-user. Mobile communications equipment is also an important factor which can affect the future development of mobile learning.

### B. Artificial Intelligence In Personal Knowledge Management

In this study the personal knowledge management helps to improve personalisation of people personal knowledge management is a conceptual framework, which is used to organizations, individuals think it is important to integrate information and integrate information in order to allow them into personal knowledge warehouse. It introduces problems like:

- The problem of information overload.
- The problem of unstructured information.
- The problem of tacit knowledge.
- The problem of decision making.

To provide quality information retrieval services is one of the important content of support services at a distance. Mobile intelligent retrieval is in fact to provide the intelligence engine in mobile learning

## III POSITIONING TECHNIQUE

### A. Location service

The location service is required to identify user's position in the museum. We use infrared signal transmitters at the front side of every exhibits to do the positioning, by letting them keep telling the tour agents inside the mobile devices their identify number. The tours agents then give this identify number to the location service so as to know where it is and what exhibit the user is looking at. Besides supporting user positioning,

location service is also used to support queries on locations of other visitors.

### B. Infrared transmission device

Once a visitor approaches the exhibit, his PDA will display the expositive information of the exhibit automatically, according to the received infrared signal from the exhibit. That is, the visitor is able to learn deeply or just browse the expositive information by himself, based on his knowledge on the exhibit. Knowledge is passed to visitors through the interaction with the museum environment, and the problem on limited tape capacity no longer exists. Besides, the visitor can roam and look around in the museum at his pleasure, and does not need to stay close to the expositor. The Palm OS was the most popular PDA operating system. Our approach to implement this system was no doubt being it. The hardware resources of a Palm PDA were quite few which was a challenge to build virtual museum on hand

The infrared transmission technique we want is a connectionless data communication protocol. Its mission is to constantly send out the exhibit ID no matter if there is any PDA going to receive that signal. Because no commercial products that match for our design are available, we decided to design the infrared transmission device by ourselves. Using the controller of the infrared transmitter, it keeps emitting an identifier of the exhibit into the air. Once a PDA gets the identifier, the museum guide system on PDA should switch the exhibit page to the correct one.

### C. RFID

Radio Frequency Identifier is a wireless communication method for identifying objects and therefore can be used to identify places. RFID's have been used in various applications that permeate our daily lives, such as labelling books, films and CDs to avoid drawing them illegally from a library or a shop. Another application that has become well known is the use of an RFID tag in auto-mobiles. This RFID tag simplifies the payment in highway toll bays with RFID reader technology.

### D. GPS

Global Positioning System consists of a constellation of 24 satellites, equally spaced in six orbital planes 20,200 kilometres above the Earth, that transmit two specially coded carrier signals: L1 frequency for civilian use, and L2 for military and government use" GPS is used as a popular mean to locate passenger and The GPS system works by triangulating the location of at least 3 satellites in relation to the GPS device. There are applications based on this technology, such as navigation assistance. A GPS device can provide a location with accuracy in the range of 5 meters. The GPS system is ideal for locating the user in outdoor applications but have severe limitations for indoor applications.

### E. Bluetooth.

Bluetooth is a wireless communication technology that has frequently been used to create personal networks. Most modern available devices and gadget provide Bluetooth communication. For example, mobile phones, laptops, PDAs and wireless controllers

Bluetooth can be used for location-based applications as smart tags.

**F.WLAN**

WLAN is a network based on local wireless communication (Wi-Fi). The network is formed through a number of access points that are placed within a location. The user’s physical location is obtained through triangulation. It is also used to compute the proximity to another user. There is a restriction that these access points need to be available in the first place. Because of that, this technology is not feasible for some outdoor applications. But has been successfully used for indoor applications.

**G. Combination of methods**

Methods can be combined to exploit the strengths of each of them. For example, GPS can be used to obtain the approximate location in the range of 5 meters later on RFID technology can be used to obtain a location in the range of centimetres.

*Table 2 Comparison between positioning technique*

The comparison helps to understand the accuracy requirements of several positioning technique, which helps to know which serves better in usage

Positioning technique	Position accuracy	Error rate occur in indoor position	Cost to make exhibit locate	Back Ground knowledge should maintain
Infrared technique	high	low	low	little
IEEE 802.11 Series	low	high	much	low
GPS	Low	low	little	low
Bluetooth	low	high	Much	low
WLAN	medium	low	medium	high

**Table 1 Location aware technologies**

Interactive system	Location Based techniques	Architectural style	Extra device
Agent system	WIFI	Centralized and standalone	screens
Tour guide system	RFID	Non centralized	screens
E museum project	Bluetooth	standalone	none
Phone guide	Bluetooth	standalone	Camera equipped with mobile phone
Interactive guide system	RFID	Centralized or standalone	camera

**IV. INTERACTIVE STORY TELLING MACHINE USING RFID**

- The RFID tag is read.
- The tag ID number is obtained via Bluetooth to the mobile device.
- The tag ID number is then sent using the EDGE/3GSM protocol to the web server. Communication to the server is achieved through servlets that accept requests made via the mobile phone.
- The servlet makes a request (query) to the MySQL database.
- The database immediately returns the information (story fragments) to the servlet (web server).
- The corresponding servlet (web server) sends the story fragments to the client (mobile device).
- The interactive story is then generated in the mobile device by linking story fragments in a consistent way
- The generated story is displayed on the mobile device.

There has also been a significant amount of research on the development of interactive museum exhibits and mobile guide devices over the last decade. In this study briefly review humanoid conversational agents (virtual and robotic) that are deployed in public spaces, four of which are installed in museums as guides and one which acts as a receptionist. None of these agents use explicit models of the user-agent relationship, and they have a very limited repertoire of relational behaviour. Two are able to identify visitors but only use this information to address users by name. These systems also do not support dialogue, or only support it in a very limited manner.

**V.CONCLUSION**

Museum guide provides information from ancient history to modern ages efficient guide would replicate the history as it is. Thereby better and accurate historical information has been provided through PDA. From this we can conclude that there are several technologies are involved like GPS, RFID and some of the artificial intelligence concepts are known through this importance of tour guide are come to people’s knowledge.

**REFERENCES**

[1] Athanasios Fevgas, Panagiota Tsompanopoulou, and Panayiotis Bozaniis “iMuse Mobile Tour: a personalized multimedia museum guide opens to groups” Department of Computer and Communication Engineering University of Thessaly Glavani 37, 382 21 Volos, Greece

[2] Carlos Delgado-Mata and Ramiro Velazquez Escuela de Ingenieria Universidad Panamericana Robert J Pooley, Ruth Aylett and Judy Robertson Heriot Watt University, Riccarton Campus, Edinburgh “MPISTE: A Mobile, Personalised, Interactive Story Telling Environment”

[3] Chen Jing, Guo Junwei, Wang Yongtian Key Laboratory of Photoelectronic Imaging Technology and System, Ministry of Education of China, School of Optics and Electronics, Beijing Institute of Technology “Mobile Augmented reality system for personal museum tour guide Application”

[4] Jianga Shang<sup>1,2</sup>, Shengsheng Yu<sup>1</sup>, Fuqiang Gu<sup>2</sup>, Zhanya Xu<sup>2</sup>, Liangfeng Zhu<sup>3</sup> College of Computer Science and Technology,

- Huazhong University of Science and Technology , Wuhan, China 1 Information Engineering Faculty , China University of Geosciences, Wuhan, China 2 Key Laboratory of GIS for Ministry of Education, East China Normal University, Shanghai, China “A Mobile Guide System Framework for Museums Based on Local Location-aware Approach”
- [5] ” Lixin Diao<sup>1</sup>, Mingzhang Zuo<sup>1</sup>, Qiang Liu Information & technology Department,Central China Normal University ,Wuhan, China “The Artificial Intelligence in Personal Knowledge Management”.
- [6] Li-Der Chou, Ching-Chao Lee, Ming-Yu Lee, Chun-Yen ChangDepartment of Computer Science and Information Engineering National Central University, “A Tour Guide System for Mobile Learning in Museums”
- [7] Li-Der Chou, Chia-Hsieh Wu, Shih-Pang Ho, Chen-Chow Lee, and Jui-Ming Chen Department of Computer Science and Information Engineering National Central University “Requirement Analysis and Implementation of Palm-Based Multimedia Museum Guide Systems
- [8] Qiang Liu Art Academy China Three Gorges University Yichang, China , Lixin Diao Information & technology Department Central China Normal University Wuhan, China “The application of Artificial Intelligence in Mobile Learning”.
- [9] Timothy Bickmore Laura Pfeifer Vardoulakis Daniel Schulman “Tinker: a relational agent museum guide”.
- [10] Yo-Ping Huang and Wei-Po Chuang Department of Computer Science and Engineering” Improving the Museum’s Service by Data Mining and Location-aware Approach”.