Application of artificial intelligence technology in hospital management systems

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Abstract. This article explores the application of artificial intelligence technology in hospital management systems, specifically using the innovative work order project as an example. The system can interact with users through intelligent AI interaction through text and voice, enabling intelligent work order repair and query processing. The project includes multiple functions such as work order form generation, attachment uploading, voice file uploading, work order query, and interface docking. In addition, this article also introduces the requirements for integrating hospital logistics business with Turing CHATGPT application scenarios, including equipment failure repair, patient satisfaction surveys, patient follow-ups, and medical staff training and learning. Through detailed descriptions of interface docking, data flow, and functions, this article highlights the potential of AI technology to enhance work efficiency and user experience in hospital management systems. Finally, this article discusses the current achievements and future development directions and calls for further innovation and progress in medical information management systems.

Keywords: Artificial Intelligence, Hospital management systems, Application.

1. Introduction

Artificial Intelligence is the branch of computer science that deals with the intelligence of machines where an intelligent agent is a system that takes actions that maximize its chances of success. It is the study of ideas that enable computers to do the things that make people seem intelligent. The central principles of AI include such as reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects. It is the science and engineering of making intelligent machines, especially intelligent computer programs. With the rapid development of informatization, artificial intelligence which is a branch of computer technology has been widely applied in hospital clinical management and has become an essential infrastructure for the operation of modern hospitals. This article explores the application of artificial intelligence technology in hospital management systems, focusing on intelligent AI interaction and its application in intelligent repair and query of repair work orders. With the continuous development of hospital management systems, new challenges have been proposed for the efficiency and accuracy of work order repair and query. However, there are problems with incomplete information and lengthy processing time in the current work order processing process, as well as research debates on achieving work order intelligence. Therefore, this review will explore the innovative application of artificial intelligence technology in hospital management systems from the perspectives of functional description, interface docking, and application scenarios of intelligent

interactive systems. Research and analysis will reveal the great potential of AI technology in improving work order processing efficiency and user experience, providing valuable insights for developing hospital management systems [1,2].

Artificial intelligence technology, which simulates human intelligence, has brought unprecedented improvements to hospital management systems through data analysis, automated processes, and intelligent decision support. Its application in the medical field has shown great potential, from providing more efficient patient care to optimizing resource allocation to strengthening decision support, all of which have achieved significant results. The introduction of AI makes hospital management more intelligent and provides more convenient and personalized services for medical staff and patients. This section will explore the application of artificial intelligence technology in hospital management systems from different perspectives, focusing on the functions and scenarios mentioned in the intelligent work order project [3].

2. Smart Work Order Project: Improving Hospital Operation Efficiency

The project aims to improve hospital operational efficiency. The project has the following functions: work order form generation (work order repair), through interaction, the intelligent system obtains the user's work order repair information, including title, reporting path, problem description, location, priority, repairer, repair time, and so on.; Attachment uploading function: During the conversation process, attachments shared by users, such as pictures and files, will be submitted to the background management system; Voice file upload function. If users submit a work order via voice, the voice recording will be saved and uploaded as an attachment to the backend system. Work order query: The intelligent system handles user queries, including the type of repair issue, work order title, problem description, repairer, and repair time. The system will present a response containing the problem type, title, description, reporter, time, status, handler, solution, and processing time [4].

In terms of design and implementation, the project will call on existing robot creation and training, including slot configuration, slot extraction, intent classification, and training, to ensure that the robot can effectively understand and handle user interactions. To accurately identify maintenance descriptions and location information, semantic training is crucial. The intention recognition ability of the robot will be trained using a dataset containing maintenance-related text and location descriptions. In addition, work order repair and query interfaces will be designed to connect the intelligent system with the back-office management system. The system collects complete work order information and structures it in JSON format. JSON, as a new generation of data exchange format, is becoming increasingly popular due to its lightweight, easy-to-parse, and high-efficiency characteristics. Therefore, submitting the work order information as JSON to the backend system will significantly save computing power. Finally, intelligent systems can seamlessly integrate with WeChat, Enterprise WeChat, and Ding Talk to provide users with multiple platforms for fast and efficient ticket interaction [5].

3. Practical Applications in Multiple Scenarios

The diversity of hospital logistics operations requires intelligent interactive systems to possess the ability to respond to different scenarios. With the integration of Turing CHATGPT, the system has achieved applications in various scenarios, such as equipment failure reporting, patient satisfaction surveys, patient follow-up visits, and medical staff training and learning. For example, medical staff can report equipment failures through the intelligent interactive system, and the system will generate work order information based on the interaction content and submit it to the logistics management system, thereby accelerating the fault-handling process. At the same time, applications such as satisfaction surveys and follow-up visits can be efficiently conducted through intelligent interaction [6].

3.1. Equipment Failure Reporting and Maintenance

Hospitals rely heavily on a wide array of medical equipment to provide quality healthcare services. Equipment failure can disrupt operations, affecting patient care and safety. An intelligent interactive system, integrated with Turing CHATGPT, plays a crucial role in streamlining the process of equipment

failure reporting and maintenance. When medical staff encounters a malfunctioning device, they can use the system to report the issue in real time.

The system can interact with the staff, gathering essential information about the problem, such as the equipment type, location, and a description of the issue. It can also provide immediate troubleshooting tips, helping staff resolve minor problems on their own. After gathering the necessary information, the system can generate a work order with the details provided by the staff and submit it directly to the hospital's logistics management system. This automation speeds up the fault-handling process, ensuring that malfunctioning equipment is repaired or replaced promptly, minimizing disruptions to patient care.

3.2. Patient Satisfaction Surveys

Patient satisfaction is a critical factor in the success of any healthcare facility. To maintain high levels of patient satisfaction, hospitals often conduct surveys to collect feedback and identify areas for improvement. An intelligent interaction system can be employed to efficiently carry out these surveys. After a patient's discharge or during their stay, the system can initiate a conversation, asking the patient about their experience and any concerns they may have.

Using natural language processing, the system can understand and analyze the patient's responses. This not only provides valuable insights into patient satisfaction but also allows for the identification of trends and common issues. Hospital administrators can use this data to make data-driven improvements in patient care and services, ultimately leading to higher patient satisfaction scores.

3.3. Patient Follow-up Visits

Effective post-discharge care is vital for the well-being of patients. An intelligent interaction system can facilitate patient follow-up visits by automatically reaching out to patients after they've left the hospital. The system can initiate conversations, asking about the patient's recovery progress, medication adherence, and any concerns or complications they may be experiencing. This proactive approach to patient care ensures that any issues or complications are addressed promptly, reducing the likelihood of readmissions.

Additionally, the system can provide patients with valuable information about their recovery, such as medication schedules, exercise routines, and dietary guidelines, enhancing their overall healthcare experience. The collected data can also be shared with medical staff to help them make informed decisions and adjustments to the patient's care plan.

3.4. Medical Staff Training and Learning

Continual training and learning are fundamental in the healthcare sector, given the dynamic nature of medical practices and technologies. Intelligent interaction systems can serve as a valuable tool for medical staff training and development. They can provide medical professionals with on-demand access to information, research, and training materials, enhancing their knowledge and skills.

Medical staff can use the system to ask questions, seek clarification on procedures, or access the latest medical guidelines and research. The system, powered by Turing CHATGPT, can provide accurate and up-to-date information, making it a valuable resource for both new and experienced healthcare professionals. It can also assist in simulating clinical scenarios, allowing medical staff to practice and refine their skills in a safe and controlled environment.

3.5. Administrative and Appointment Scheduling

Hospital logistics extend beyond medical care to encompass administrative tasks and appointment scheduling. An intelligent interaction system can assist in these areas as well. Patients can use the system to schedule appointments, check their test results, or obtain information about billing and insurance.

For administrative tasks, the system can handle routine inquiries from patients, allowing hospital staff to focus on more complex tasks. Additionally, it can assist in managing staff schedules, allocating resources efficiently, and coordinating various administrative processes. This not only improves patient

experience by reducing wait times and streamlining processes but also enhances the overall efficiency of hospital operations.

4. Prospects and Challenges

Although artificial intelligence technology has significantly progressed in hospital management systems, it still faces some challenges. Firstly, data privacy and security issues must be fully considered and guaranteed. Secondly, the accuracy and precision of intelligent interactive systems also need to be continuously optimized to provide a better user experience. In the future, there is anticipation to extend the application of artificial intelligence technology to broader domains, encompassing aspects like drug management, medical diagnosis, etc., to enhance hospital management's intelligence level [7].

This article comprehensively discusses the widespread application of artificial intelligence technology in hospital management systems, focusing on the needs of intelligent work order projects and the application scenarios of Turing CHATGPT integration in hospital logistics businesses. Through in-depth analysis of these functions can conclude that artificial intelligence technology has tremendous potential and prospects in hospital management, but also needs to consider and solve related challenges seriously [8].

In intelligent work order projects, users can report work orders and query progress more conveniently through intelligent AI interaction, thereby improving the efficiency of work order management. However, when generating work order forms, it is necessary to overcome the situation of incomplete user information, which may require the system to improve its understanding of user intentions further. In addition, the introduction of attachment uploading and voice file uploading functions provides users with more convenient choices but also needs to consider the system's security and data privacy protection [9].

The description of the application scenarios of intelligent integration between hospital logistics businesses and Turing CHATGPT reveals more intelligent possibilities. Whether it is patient satisfaction surveys or medical staff training and learning, intelligent interaction can enhance the user experience. However, this also requires the system to continue improving semantic recognition and question understanding to ensure users receive accurate and beneficial information [10].

At the same time, the interface docking issues in these application scenarios also need to be taken seriously. Accurate and efficient data transmission is crucial for the overall operation of the system. Ensuring stable communication and data consistency between systems is essential to applying artificial intelligence technology in hospital management systems [11].

The application of artificial intelligence technology in hospital management systems is an arena marked by both promise and challenge. While considerable accomplishments have been realized to date, a plethora of issues demand our attention. Among these are the adept handling of intricate multi-modal data, the resolution of user privacy and security concerns, and the seamless integration of artificial intelligence technology with the extensive compendium of human professional knowledge. In the panorama of future development, it is foreseeable that artificial intelligence technology will permeate diverse facets of hospital management, ushering in a new era of intelligence, efficiency, and personalization in the delivery of services.

5. Conclusion

It was found that artificial intelligence technology has tremendous potential in hospital management systems and can improve the efficiency and accuracy of patient management, resource optimization, medical decision-making, etc. Analyzing existing cases and research results, it can be concluded that artificial intelligence technology can significantly improve hospital management, increase the quality of medical services, reduce costs, and improve patient satisfaction.

Although this article has extensively reviewed the application of artificial intelligence in hospital management, there are still some deficiencies. Firstly, the research scope of this article is relatively broad and may require deeper exploration of some specific regions. Secondly, although some existing cases have been mentioned, further discussions on the challenges and problems in practical applications

can be more detailed. Improvements can be made by strengthening in-depth analysis of specific hospital management cases and discussing possible solutions for the future.

Future research can focus on several aspects. Firstly, further research can be conducted on the specific applications of artificial intelligence technology in different hospital management fields, such as medical resource allocation, case management, medical decision-making, etc. Secondly, deep research can be conducted on the collaboration between artificial intelligence and medical professionals to achieve better medical services.

To summarize, attention can be paid to issues such as medical data privacy and security to ensure the sustainable application of artificial intelligence technology. Finally, future research can also focus on the cost-benefit analysis of artificial intelligence technology in hospital management to better guide practical applications and decision-making.

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