

Smart Hospital Assistance System

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Abstract: This project is all about A Smart Hospital management system. The above-mentioned system is based on digital technology and robot mechanisms. The first assistance is by robot mechanism which is applicable for garbage collection, medicine, syringe, saline, etc. delivery, and hospital sanitization. The second part is the management application based on digital technology. The future scope of the project is to synchronize the robot activities with the management application

Index Terms: Application System, Assistance Robot, Healthcare Management, Hospital Administration

I. INTRODUCTION

A system that helps in the management of various hospital operations is called a Hospital management system. A smart system must consist of smart devices and software. There should be stronger connectivity, good coordination within different sections (departments), and patients' requirements. Cleanliness is one of the top priorities of hospitals, especially if any infectious disease is spreading. Therefore there comes a need to clean hospitals safely. To keep them clean two aspects are needed - manpower and money. Not only cleanliness but also efficient management is a need in hospitals. Managing the data of hundreds of patients and workers in hospitals, without any errors, and also providing a good experience to patients, with safety, is a tough task. A little delay can cause many things. To make it easy and helpful for hospital staff, the hospital management system is a fairly good option. Therefore, These are some of the reasons behind this project of the Smart Hospital management system.

According to [2], In India, almost all major hospitals have digital hospital management information systems. For example, basic activities for the front office include registration, appointment, admission, billing, and discharge and these activities are being done by using computerized systems. In the same way, other departments in hospitals have Individual computerized information systems. From [4], apart from smart hospital management software, there are software that are made to increase the comfort of patients while dealing with the hospital systems. For example, First pass is a unified patient experience & engagement platform which helps us with data analysis to view the patient satisfaction index and also to empower hospitals to take corrective and preventive steps in improving and acting on areas causing patient experience & satisfaction to dip.

According to [4], currently, most modern factories leverage human-robot collaboration as a part of their daily routine. Human-robot collaboration can be found not only in factories, but in offices, hospitals, and even outer space. Industries continue to develop and verify innovative solutions intended to improve upon current manufacturing processes. The new approaches, which focus on robots assisting and supporting humans, provide a safer, friendlier working environment, and increase efficiency.

From [3], there are already different types of garbage collection robots like Robo-dumpster which mainly aims at collecting garbage from full cans and dispose it in designated area and the Dust cart is made to navigate through areas avoiding obstacles and collecting waste from door to door.

[1] says that there are robots made for hospital use, namely ARMAR III, Cody, ASIMO, etc. and they help in different kinds of tasks in the hospital.

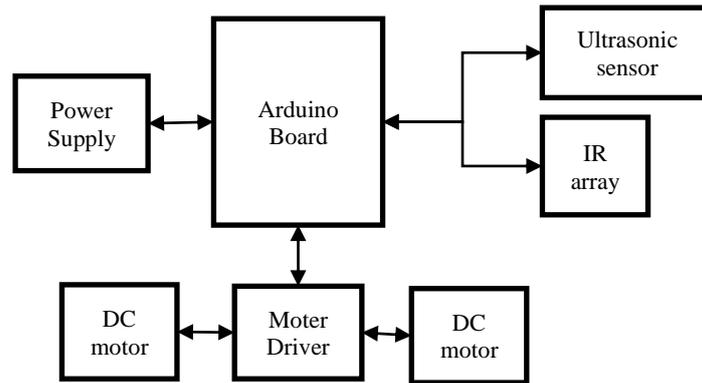
Various other technologies like IoT, RFID, and AI can be used in hospitals to improve the patient's experience.[6] RFID can be used in Supply chain management, tracking objects, attendance, monitoring patients, etc. [5] IOT can be integrated with the whole system for easy workflow and decision-making. The assistance robot goes to each patient's bed and collects garbage from their beds and dumps it into a large dustbin. Like that it can sanitize the hospital and deliver medicines to patients also. So the robot is having multifunctionality. It is easy to use. Patients can also instruct robot from their screen which is nearby their beds. It is less in cost, so small hospitals can afford it too and use it in their hospitals. It is convenient for all. In the application made to control robot manually have features like taking appointment of doctor, managing patients' database, doctors availability, doctors information, etc. Nurses can also instruct robot by the app. This way hospital management will become more efficient.

II. METHODOLOGY/EXPERIMENTAL

A. Components (Programing and Application):

1. Android Studio
2. JAVA language
3. XML (Extensible Markup Language)
4. Android Virtual Studio
5. Firebase
6. Arduino Language
7. MIT app inventor

B. Block Diagram (Robot):



III. RESULTS AND DISCUSSIONS

Robot collect garbage and sanitize all hospitals distribute medicines to all patients and follow all the instructions given by nurses and patients and keep Hospital clean and hygienic. The application can manage appointments, and databases, effectively. Users can easily create profiles make appointments and reduce paperwork. Also, they can view reports and prescriptions on their mobile easily. Also, Hospitals can keep proper records of patients and doctors effective and send patients their reports online.

IV. FUTURE SCOPE

Artificial Intelligence, Machine Learning can be used to make chatbot in app. Also various API can be integrated to add more features like maps, online payment, etc. Other app features include Medicine alert, inventory management, online consultingApp App can be upgraded for controlling robot and train robot for following instructions like doing particular work for a particular bed like deliver medicine , food etc.

V. CONCLUSION

Therefore this project elaborates what are different types of robots and their use also how they can be used remotely. By developing an app for appointment and report management, both doctors and patients' time can be saved and patients' experience will be improved.

VI. ACKNOWLEDGMENT

This project is a bridge between theoretical and practical learning and with this thinking, we worked on the project and made it successful due to the timely support and efforts of all who helped us.

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