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Healthcare Assistant Bot (HA BOT)

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Abstract: The need of an automated system including an assistive robot for performing activities in the hospital system is of great importance for doctors, nurses, patients and other healthcare assistances due to demanding workload and limited number of staffs. This project aims in providing an automated mobile robot based solution to improve the effectiveness of healthcare. Using wireless network, process of controlling and communication between patients and staffs can be performed. The proposed system is a locomotive bot. It is equipped with technologies such as Internet of things, Image processing, Automation and Android application. The Bot also has the facility to carry medicines and food for the patients without contact.This bot does the following healthcare activities as Realtime monitoring of patients Oxygen level, Pulse rate, Temperature, Android application for bot control and communication. Therefore the system can reduce the spread of viruses and also provides assistance.

Keywords: Internet of Things, Image processing, Automation and Android application.

I. INTRODUCTION:

Hospital ward is a complex co-domain within the hospital system.Doctors, nurses, other healthcare assistances must seamlessly interact to meet the requirements of patience in a hospital ward nurses play a key role in any hospital ward. the role of the nurse is to support the other healthcare professionals to identify the critical needs of the patient. Medicine responsible for the safe and accurate adiministration of medication,. Documentation process of the hospital ward system has many draw back due to inefficient method of data entering and retrieving. Medicine management and distribution within the present hospital ward system has its own cons due to poor documentation system excess number of patient.

Intelligent robots are one of the last in the path of innovation and technology, are controlled by a computer that executes the commands of a program and sends them to the manipulator to make the necessary movements, they also send information to the control computer over the status of the process This allows intelligent decision making and control of the process in real time.

OBSERVATION OF THE STUDY:

The objective of the project is to reduce the physical contact between patients and medical staffs, Providing assistances for the nurses and medical professional helps to monitor several patients at once, Automatically enters information into the patient electronic health record by system and Supply of medicines can be sequenced in order from the data provided.

II. REVIEW OF LITERATURE

2.1 LIO-A PERSONAL ROBOT ASSISTANT FOR HUMAN-ROBOT INTERACTION AND CARE APPLICATIONS

Lio-A is a mobile robot platform with a multi-functional arm explicitly designed for human-robot interaction and personal care assistant tasks. The robot has already been deployed in several health care facilities, where it is functioning autonomously, assisting staff and patients on an everyday basis. Lio-A is intrinsically safe by having full coverage in soft artificial-leather material as well as collision detection, limited speed and forces. Furthermore, the robot has a compliant motion controller.

2.2 A SOCIAL ROBOT FOR AUTONOMOUS HEALTH DATA ACQUISITION AMONG HOSPITALIZED PATIENTS

The current attention on quality monitoring instruments for hospitalized patients imposes a high data registration workload on nurses. The focus of our research was to investigate whether a social robot is able to take over some of this data collection by administering questionnaires autonomously. We performed an exploratory design experiment on the internal medicine ward of the Franciscus Gasthuis & Vlietland hospital. 35 patients (mean age 64.1±17.7, 20 female)

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participated in the study. We used the social robot Pepper to conduct five questionnaires on medical history, defecation, pain, memory and sleep. Patients and nurses found the robot reasonably acceptable in this role. Further research is needed to address concerns and optimize the nurse robot task division.

III. PROBLEM STATEMENT AND PRELIMINERIES

There may be various technologies in healthcare but need of bots is increasing to overcome this difficulty we developed a system with high accuracy and realtime monitoring of patients vital signs for effective healthcare which also decreases the direct physical contact.Thus the spread of diseases will be greatly reduced.

3.1 Block Diagram of the Proposed System:

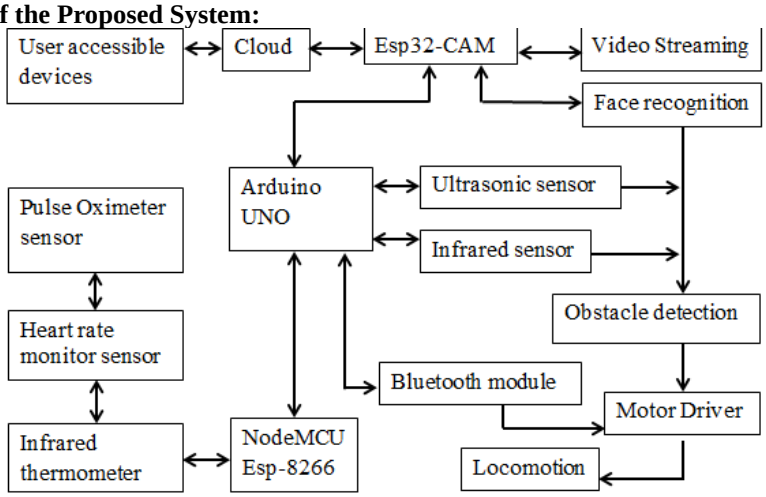

Fig 3.1 Block Diagram of Proposed system

3.2 Flow Diagram of the Proposed system:

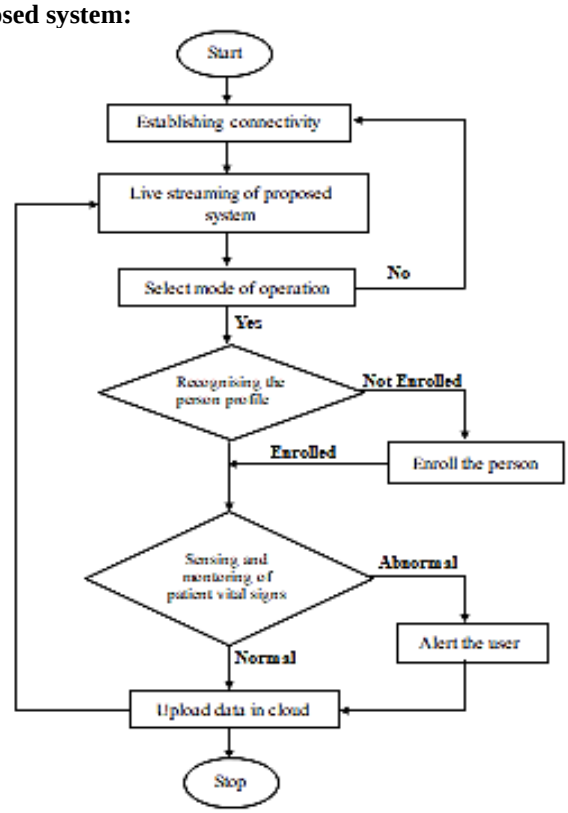

Fig 3.2 Flow Diagram of Proposed System

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The flow diagram represents the proposed system working, it begins with establishing communication and viewing the live streaming from the bot and after choosing the mode of operation the contactless sensing and monitoring of the vitals sign from the patient is recorded and the recorded data is feed in the cloud storage and the data can be viewed anytime.The process is continuously made for effective working of the system.

IV. RESULT OF THE STUDY:

The result of the system ot the proposed system and the design is shown below.

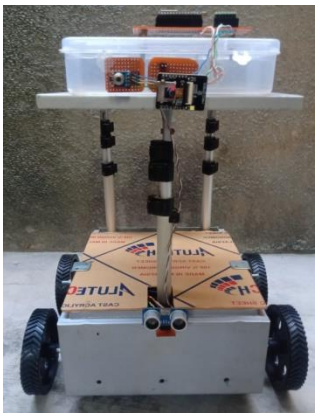

Fig 4.1 HA Bot design

Fig 4.2 Monitoring of Vital signs

PATIENT DETAILS

	A	B	C	D	E	F	G
1	Timestamp	NAME/ID	TEMPERATURE	BPM	OXYGEN LEVEL	STATUS	
2	11/12/2020 3:23:56	dinesh	75	80	90	normal	
3	11/12/2020 3:24:25	dinesh	75	80	90	normal	
4	11/22/2020 12:51:32	log	65	50	89	abnormal	
5	11/22/2020 12:51:44	log	65	50	89	abnormal	
6	2/27/2021 6:47:14	hi	56	98	100	abnormal	
7	2/27/2021 6:47:22	hi	56	98	100	abnormal	
8	3/6/2021 3:44:20	check	50	50	50	abnormal	
9	3/8/2021 9:01:08	A1	34	75	95	Normal	
10	3/8/2021 9:01:49	A1	34	75	95	Normal	
11							
12							
13							
14							

Fig 4.3 Updating details of patients

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V. ADVANTAGES:

The main advantage of the bot is to include automation in healthcare and also to decrease the spread of diseases through physical contact. It's compact size has made it suitable to manage many places.Thus the bot also monitors the vital signs of the patients.

VI. CONCLUSION:

The proposed system aims to protect the medical professionals and spread of diseases and its severity. By restricting the use of physical contact. It communicates with the users regarding the vitals state of the patients using Android application. Hence medical professionals can be saved from getting severely affected. Thus, the Healthcare Assistant Bot decreases the spread of diseases like covid-19.

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