

PROCUREMENT OF MEDICAL DATA IN REAL TIME AND SORTING OF MEDICAL GARBAGE USING HANGING ROBOTS

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ABSTRACT

Nowadays, to monitor or run the machines, there is little need for active human interaction, it is being automated. Some devices can be remotely controlled with the available technologies. Runways at airports to analyze, to analyze the animals in the zoo, amazing image of capturing videos, capture videos and cover the whole stage, an industry monitoring of the environment, waste and the removal of this technology is very useful, because it's the Earth Hangs from above. This robot would significantly reduce the costs of inspection and repair that the ground or aircraft crews now have to bear, particularly in remote areas, but with this technology, it is becoming smaller and cheaper. Alternatively, the robot has DC motors and a portable camera with sophisticated image processing to record videos. The primary goal of this project is to simplify the industrial security deployment data collection and control system. Industries operate in a systematic manner. Maintaining & monitoring the record of each process is quite difficult. To acquire and control an industry's environmental values such as gas, temperature, and light density automatically with a movable hanging device using cables, (i.e.) Hanging Robot. It contains the required sensors like gas, fire, light and etc., in it. The Controlling unit is designed using Matlab or Lab View and it is designed in such a way that is able to control the hanging robot from a remote location. The received data from the sensors in the personal computer can be graphically represented in real time.

Keywords: ZigBee, Data Acquisition, RF, Matlab hanging robot.

1. INTRODUCTION

Disseminated air contaminants over large areas of populated land have the ability to cause a variety of diseases [1]. Contact with biological waste that has been poorly disposed of leads to: Lung infections, Infectious diseases. Practice Greenhealth, a non-profit group seeking to make hospitals more safe, reports that 25 per cent of a hospital's waste is plastic. A single hysterectomy study found that the operation could create up to 20 pounds of waste, the majority of which is plastic. Most of the hospital, medical wastage is handling by human so easy to affect

the harmful diseases. Not only does medical waste present severe health problems for humans, it can also lead to animal contamination if medical waste is not handled properly and on landfills they come in contact with this waste [2]. If animals are infected, they can transmit their diseases to other animals and spread the disease [3]. A total of 5,562 kg/day of waste, about 77.4 percent not-and about 22.6 percentiles are dangerous provided by the survey findings from HCE(Healthcare Institutions). Average waste production values for the HCE survey are 1.9 kg/day or 0.5 kg/patient/day [4]. The study reveals that medical waste is insufficiently and consistently handled, with the exception of a few private HCEs that isolate its infectious waste [5].

Industrial automation includes the usage of electronic systems, such as robots, and emerging technology to handle different processes and algorithms to substitute human beings in production [6] This is the second phase in the process of industrialisation after mechanization. Industrial technology prevents person-caused diseases, health-care expenses and person operator-related compensated leave and holidays. In comparison, factory automation does not require extra benefits at the job, such as bonuses and pension protection. Above all, although this is associated with higher initial costs, it decreases monthly wages for workers, resulting in substantial cost savings for the company. Maintenance costs associated with factory automation systems are low, since they are often unreliable. [7]. If this fails then it is supposed to be repaired by computer and repair engineers. While several businesses hire hundreds or run the plant on a daily basis for two or three days, the plant is also closed for repairs and vacation. Industrial Automations Fill is able to run the warehouse 24 hours a day, 7 days a week, 365 days a year The company's activities are carried out [8]. Which contributes to substantial improvements in the company's productivity. Automation through the individual error. In addition, unlike humans, robots do not suffer from any fatigue, resulting in uniform quality products that are produced at different times. Industrial automation can allow workers to protect the production line through the deployment of robotics to monitor hazardous environments. Owing to its tremendous advantages, such as performance, accuracy and low cost safety, industrial automation has recently become increasingly relevant to a wide range of industries.

1.1 LIMITATIONS OF CURRENT SYSTEMS

The current system implemented in the industry to sense various environmental values is fixed i.e. mounted on to a wall or separate towers are raised to accommodate the WSN (Wireless Sensor Networks) which immobile thus leading to the requirements of more number of sensor network units in various parts of the industry.

Wireless sensor network drawbacks can be described as follows:

1. Less secure, so hackers can get to the point of entry and collect any information.
2. Poor performance in contrast to the network wire grid.
3. Configuration relative to a wired network is more complicated.

4. The ecosystem (such as doors, microwave ovens, large distances due to signal awareness) is quickly disturbed.
5. Cracking it is fast for hackers and we can not track the propagation of the wave.
6. The speed of contact is comparatively poor.
7. Several things such as the blue-tooth are distracted.
8. It's Costly (Most significantly).

1.2 OBJECTIVE OF THE PROJECT

The principal aim of this project is to simplify the collection of real medical industrial data and the separation of medical garbage. Because of most medical wastes have the harmful gases so people easy to affected from harmful disease [9]. Industries operate in a systematic manner. Maintaining & monitoring the record of each process is quite difficult [10]. To acquire and control an industry's environmental values such gas, temperature, and light density automatically with a movable hanging device using cables, (i.e.) Hanging Robot. It contains the required sensors like gas, fire, light and robotic arm etc., in it. So it can monitor an industry in order to maintain the required environment and collecting the medical wastage by the industry.

2.SCOPE OF THE PROJECT

At Basic Robotics, we are building devices to perform complex tasks, and robots are versatile in their advanced iteration, that is, capable of adapting to evolving situations, and also autonomous, that is, taking decisions them. The most important thing to note in building a robot is of necessity the functionality to accomplish. The discussion here is about the automation and engineering features. Robots have a basic degree of complexity and every degree has the objective of implementing the features necessary. The sophistication of the robots is described by the amount and configuration of components used in the legs, the amount of hands, actuators and sensors used and the size and number of microprocessors and microcontrollers used in advanced robotics. Any incremental factor contributes to the servicing role of the robot. The degree of freedom a robot may work on increases throughout the performance of the microprocessors and microcontrollers on which a robot that perform with each combination added. The possibility of extending this hanging robot idea is confined to human imagination and this project's size is nearly limitless.

2.1 PROTOTYPE CONSTRUCTION

Everything that we have in the world today, whether it's large machines or little devices, it changes immediately. It has the benefit of not needing to provide direct human contact to control or operate the machinery. Using the current technology many computers can be controlled remotely. This system will greatly reduce the expense of monitoring and restoring that staff working on the ground or in air, even in remote regions, would now carry. "You're usually using aircraft and field forces, but now it's becoming smaller and simpler with the

technologies..Furthermore, the robot is fitted with DC motors and handheld video capturing devices with automatic image processing.Using RF communication we can monitor the device. To sustain the required environment for the sector.The Hanging Robot's recorded real-time value includes the necessary sensors such as air, heat, light etc., in it. This helps the industry to monitor the passage of various sensors to the Personal Computer with the aid of ZigBee technology.The control unit is constructed using Matlab or Lab View, and is equipped to track the hanging robot from a remote location.The data collected from the sensors can be interpreted graphically in real time on the personal computer.If the ideal environment deviates from the appropriate principles, the Hanging Robot would raise the alarm and point out to factory workers.Fig 1 shows the prototype of the system.

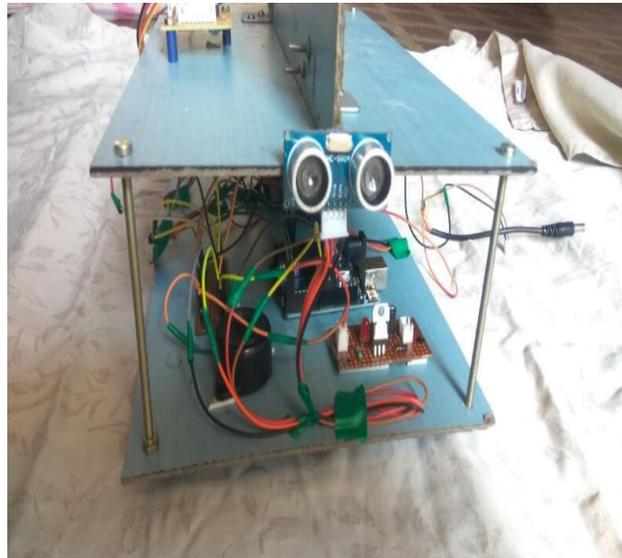


Fig. 1:Prototype Construction

3.PROPOSED SYSTEM

Proposed system overcome the problem occurred in Medical trash segregation. This system consists of Gas sensor, Temperature sensor, wireless camera, ZigBee, fire sensor, Motor, and Buzzer. Gas sensor is used to sense the any gases in medical wastage, Temperature sensor used to monitor the temperature in place. Fire sensor is a type of detector, primarily intended for the detection and reaction of a wireless camera with a user-view. Fire or blaze phenomenon. If fire or flame is occur sensor intimate the controller and controller trigger the Buzzer. Controller operate the ARM to two directions, if gas sensor sense any gases controller operate the robot in left side that means hazardous, otherwise controller operate in right side that means non-hazardous. This system linked with MATLAB GUI so we can monitor the output data in monitor. In this system ZigBee wireless transceiver used because all the measure data's are sent through the monitor. Monitor side ZigBee wireless transceiver receives the data's from

Controller and show the monitor. Wireless camera streaming output also show in MATLAB GUI. Fig 2 shows the block diagram of proposed system.

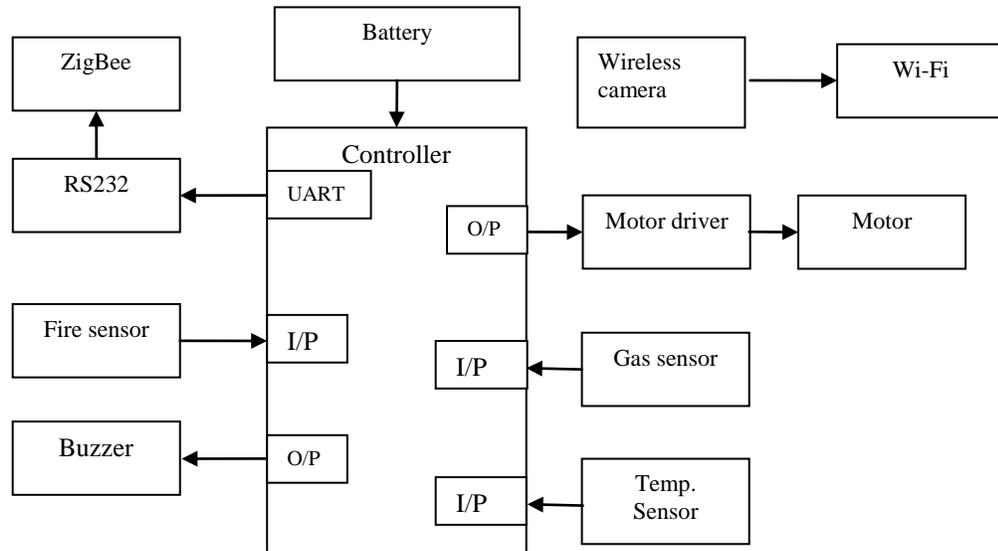


Fig. 2: Block diagram of proposed system

4.RESULTS AND DISCUSSIONS:

Proposed system made and conducted the test. All the sensor like gas, temperature and Fire sensor are connected to the controller. Gas sensor sense the gas in medical wastage if any harmful gas is present in the wastage robotic arm through the wastage in left side other wise move to right side. All the collected data viewed by MATLAB GUI. Fig 3 shows the monitoring and controlling image.

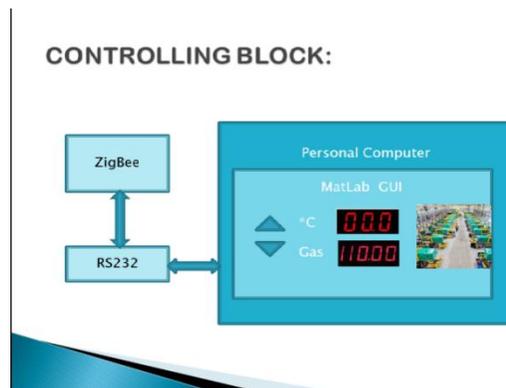


Fig. 3: Monitoring and Controlling block

5.CONCLUSION

The project was successfully completed with all the features given in the features section of the project. All the modules and sensors were successfully tested and performance was noted for each sensor. All the bugs were fixed and verified under test conditions. As the industry continues to suffer the high expenses for the automation of the industry, this prototype proves to be efficient in sensing the environmental values in the various parts of the industry and it is also cost-efficient. Thus helping the industrial automation to achieve a new level in a very cost efficient way.

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