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IOT Based Smart Ambu Bag Compressing Machine

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Abstract: ***Novel corona virus (COVID-19), an ongoing pandemic, is threatening the whole population all over the world including the nations having high or low resource health infrastructure. The number of infection as well as death cases are increasing day by day, and outperforming all the records of previously found infectious diseases. This pandemic is imposing specific pressures on the medical system almost the whole globe. The respiration problem is the main complication that a COVID-19 infected patient faced generally. This project aims to overview the existing technologies which are frequently used to support the infected patients for respiration.***
Keywords: Arduino Uno, compressing machine, BVMbag, servo motar

I. INTRODUCTION

In our India Covid situation has become worst than before. India needs ventilators to fight against corona. Due increase in the number of patient, managing patient has become very difficult task for Doctors and other authorities. Also cost of the ventilations very High. So Motivation of Project is the convenience of patient Doctors and Hospital authorities in Healthcare System. So solving the Problem By using different sensor like temperature sensor, heartbeat sensor, Arduino and to develop affordable ventilators is our main idea. Ventilators are one of the most important devices to keep COVID-19 patients in the most critical condition alive. As the global demand for ventilators is increasing and there is shortage of ventilators in our country as well, also managing patients during this time is a big task, Based on survey it is found that there is a need of affordable Low-cost ventilators in India to fight against COVID -19, also managing patients during this time challenging task and it is intended to develop a low cost Smart Ambu -Bag Compressing Machine for Low Cost Ventilators.

A. Problem Statement

On the basis of our servey it is found that there is a need of affordable low cost ventilator in india to fight against COVID-19 ,also managing patients during this time challenging task.we choose our project & its title as "IOT Based Low Cost Smart Ambu Bag Compressing Machine For Low Cost Ventilators"

B. Objective:

1) To meet the increasing demand of mechanical ventilators due to COVID-19.
2) To provide low cost alternative to ventilators.
3) To develop a very easy to operate system so that any less experienced person must be able to operate it with ease.
4) To develop a cloud based patient management system to handle patients of COVID19

II. LITERATURE REVIEW

Author Name	Publish year	Tittle	Relevance to current study
S. S. Iyer, et al.	2021	Smart Respiratory Device with IoT Connectivity	This study proposes a low-cost, IoT-based smart Ambu bag compressing machine for ventilators.
A. K. Singh, et al.	2020	Design and Development of Internet of Thing Based Ventilator System	This paper presents the design and development of an IoT-based ventilator system that uses a servo motor to compress a conventional Ambu bag.
R. Kumar, et al	2021	IOT BASED RESPIRATORY VENTILATOR	This study proposes a portable, rechargeable battery-operated Ambu bag compressing machine that sends real-time cloud messages to doctors and medical authorities.
S. S. Rao, et al	2020	IoT Based Automated Ambu Bag Compression System	This paper presents the design and development of an IoT-based automated Ambu bag compression system that uses a DC motor to compress the Ambu bag.

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III. METHODOLOGY

A. Literature Review Methodology

1) Conduct a comprehensive review of existing research and technologies related to IoT in medical filed

2) Identify gaps in current methodologies and technologies that your system will address.

B. System Design

1) Architecture Development: Design a scalable architecture for the IoT-based Smart AMBU Bag Compressing machine , outlining key components such as sensors, actuators, controllers, and motar ,communication protocols.

2) Component Selection: Choose appropriate sensors (e.g., temperature, humidity, motion), microcontrollers (e.g., Arduino, Raspberry Pi), communication modules (e.g., Wi-Fi, Zigbee) and motor (e.g.,Servo Motor).

C. Prototype Development

1) Hardware Setup: Assemble the compressing machine with the selected IoT components, ensuring compatibility and integration of sensors , controllers and Motar.

2) Software Development: Create software for data collection, processing, and control using programming languages such as Python or JAVA. Develop a user interface for monitoring and control.

D. Data Acquisition and Processing

1) Implement data acquisition techniques to gather real-time data from the medical .

2) Use cloud services or edge computing for data storage and processing to enable remote access and analytics.

E. Performance Evaluation

1) Analyze data collected during testing to evaluate system performance metrics such as efficiency, downtime, and resource utilization.

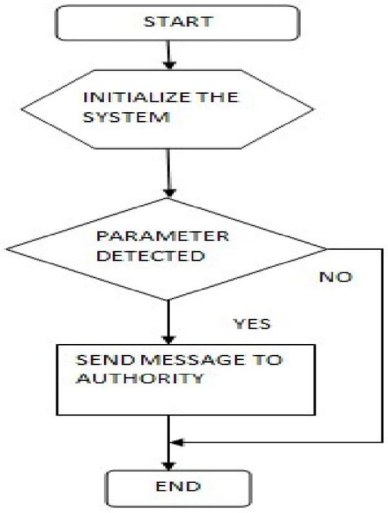
2) Gather user feedback to assess usability and identify areas for improvement.

F. Deployment and Maintenance

1) Develop a deployment plan for implementing the system in a medical field.

2) Establish a maintenance protocol to ensure the system operates smoothly and adapts to changes in oxygen needs.

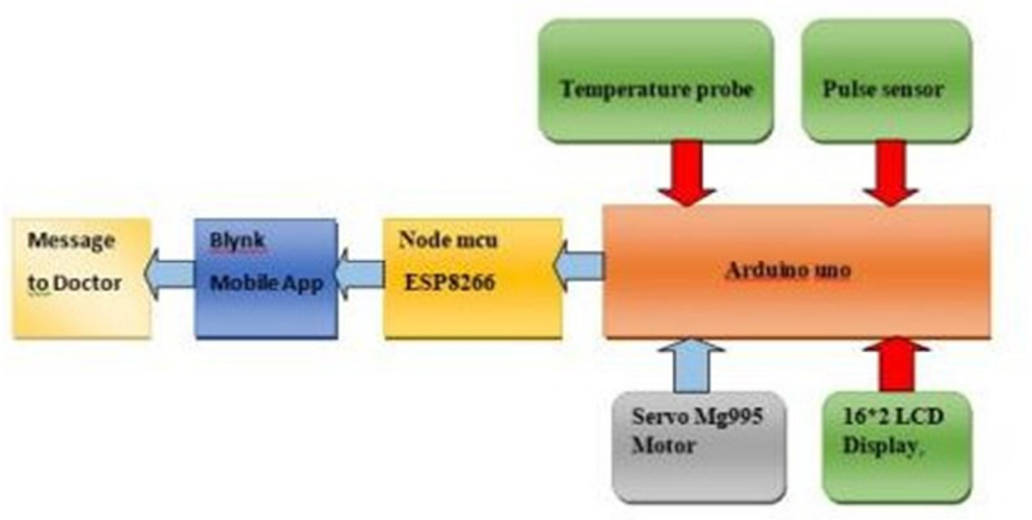
IV. FLOW CHART



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V. BLOCK DIAGRAM

The name of our project is “IoT based Automation of Power Loom in Textile Industries”. The working of this project contains element like RFID tag, RFID reader, proximity sensor, relay, dc motor, GSM, PIC microcontroller. Proximity sensor and RFID card is prior thing in this system. The first element of this is RFID tag, and RFID tag contains data of a particular worker to which is authorized. RFID card when hold by an employee in front of RFID reader. RFID reader will detect the data that which worker is operating on that particular machine. RFID reader contains the program to read the tag information. Second element of a system is proximity sensor which is calculating length of cloth. This calculating cloth length in meter and this data is added to the authorized employee account which is sent to website using IoT. At the time of salary this information is send through text SMS to works mobile number.

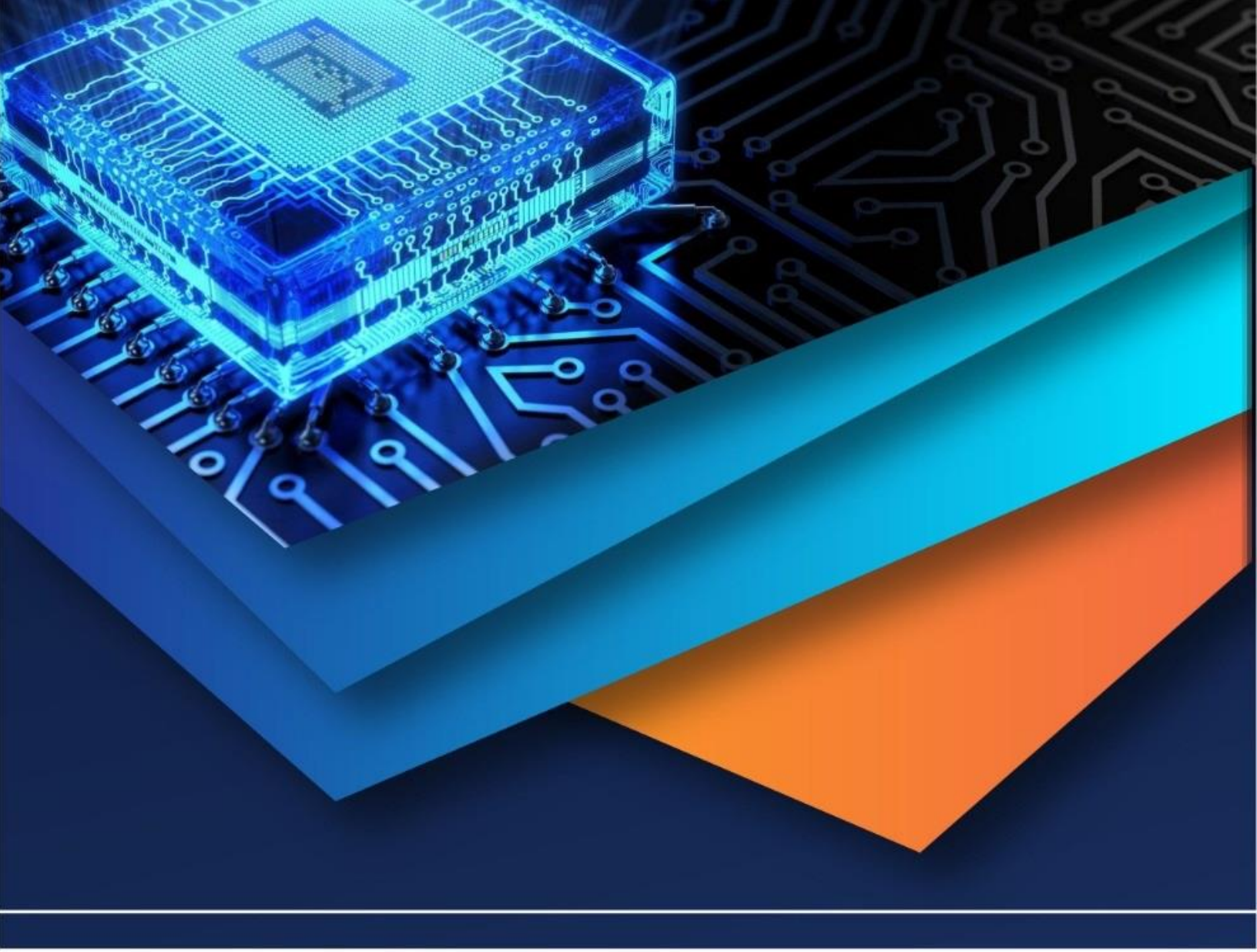


VI. CONCLUSION

All in all, our final hardware met our expectations quite well. We focus mainly on monitoring to patients without human-to-human interaction. This system has low power consumption, low cost and is convenient way to control real-time monitoring for unprotected school bus. This system is useful while shifting patients from ICU or home to ambulance or if needed at any accident site. It helps persons who perform first aid by systematic easy approach, even less experienced persons can easily operate it. Easy to reprogram if any changes are required in the system. Overall, we consider the project a success.

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