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Intelligent Medicare Assistant for Patient

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ABSTRACT : In this current world, many dreadful disease such as corona virus, zika , influenza etc., is spreading all over the world, where this new diseases should be identified and treated with proper timely medications along with certain therapy to treat that disease .This kind of diseases is every severe, where even the doctors could not reach the patients for treatment. Hence the main objective of this project is to provide medicine for the patients at appropriate time and to check their heartbeat, blood pressure and temperature without the help of a doctor or human,via respective sensors. This robotic system is activated and reaches the destination place of a patient, accurately if the obstacle is not found. In case of any obstacles found, the robot senses the obstacles and change its direction towards its destination and provides the patient with a timely medication.

KEYWORDS: GSM module, LCD display, IOT, sensor

I.INTRODUCTION

In this world, many people where affected by several dreadful disease. Though many upcoming medicines had been found for these kind of diseases, but people where unable to take medicines at right time. These new diseases require timely medication and proper treatment for curing. The most common reason for the failure of this medication therapy is because of the failure of the patient to administrate those medicines in the right proportion and at right time.C.Nagarajan et al [2,5,9] studies this new feature is so called intelligent medicare assistant for tablets. The regular monitoring of patients will be stored continuously in the IOT server. If this datum exceeds certain level beyond the critical level an automatic message will be sent with the help of GSM module either to the doctor or to the corresponding persons who takes care of the patient.

II.LITERATURE SURVEY

According to World Health Organization, over 80% of the people above the age of 60 years are prescribed medicines that are to be administered 2 - 4 times a day. With the increase in Cardio vascular diseases and Diabetes among the peer group regular medicine administration has become a necessity. But among this another 40-60% is having the issues related to forgetting the taking of medicines at right time. The sensing of slots of the pill box can be done by both Load Sensing methodology and by Light based sensing. The advantages of the slot based sensing is that individual moment sensing is possible for detecting over dosage problems and incorrect dosage. The survey for various modes of sensing the slots has been performed both analytically and practically and comparisons between the modes have been performed.

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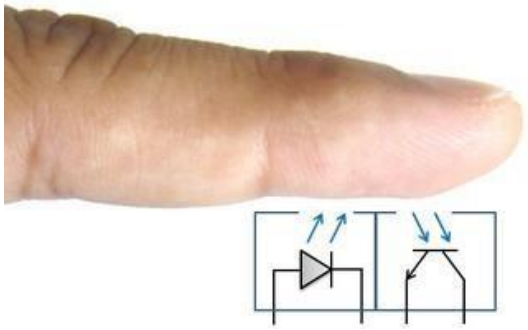
III.SENSING METHODOLOGY

In this project,three main sensors are used to monitor the patients.

- Heart beat sensor
- Pressure sensor
- Temperature sensor

Along with these sensors many other sensors can also be included depending upon the patients disease criteria.

IV.HEARTBEAT SENSOR



This sensor is based on the principle of photoplethysmography (PPG) which is a non-invasive method of measuring the variation in blood volume in tissue using a light source and detector. Change in blood volume is synchronous to heartbeat. Transmittance and reflectance are two basic types of photoplethysmography.
In the circuit shown above, the sensor output is first passed through a RC high-pass filter (HPF) to get rid of the DC component. The cut-off frequency of the HPF is set to 0.7 Hz. Next stage is an active low-pass filter (LPF) that is made of an Op-Amp circuit. The
gain and the cut-off frequency of the LPF are set to 101 and 2.34 Hz, respectively. Thus the combination of the HPF and LPF helps to remove unwanted DC signal and high frequency noise including 60 Hz (50 Hz in some countries) mains interference, while amplifying the low amplitude pulse signal (AC component) 101times.The output from the first signal conditioning stage goes to a similar HPF/LPF combination for further filtering and amplification (shown below). So, the total voltage gain achieved from the two cascaded stages is 101*101 = 10201. The two stages of filtering and amplification converts the input PPG signals to near TTL pulses and they are synchronous with the heart beat. The frequency (f) of these pulses is related to the heart rate (BPM) as, Beats per minute (BPM) = 60*f

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VI.PRESSURE SENSOR

The MPS-2000 features silicon pressure sensors in 6-pin dual in-line packages. All parts in these series are uncompensated high-performance die mounted on a substrate with a plastic cap. Pins are designed for through- board assembly. The MPS-2000 is ideal for applications requiring low hysteresis, high reliability and stability.With constant voltage excitation, the MPS-2000 produces a voltage output that is linearly proportional to the input pressure. The user canprovide MPS-2000 with signal conditioning circuitry to amplify the output signal or to maximize OEM value added. The MPS-2000 is compatible with most noncorrosive gases and dry air.

resistance. The Thermostat's temperature can change either due to external factors or due to internal factors.

VIII.WORKING/OPERATION

The regulated power supply of 230V is stepped down by using step down transformer (230/12)V and that is fed to the PIC16F877A via rectifier. The LCD is also connected to the PIC micro controller to display the measured output of the sensors. The heartbeat sensor, temperature sensor, pressure sensor are also connected to the PIC microcontroller. Every measured output of the sensors are stored in the IOT server. Once this level exceeds the critical value, the message is sent to the doctor or the respective in charge person via the GSM module.

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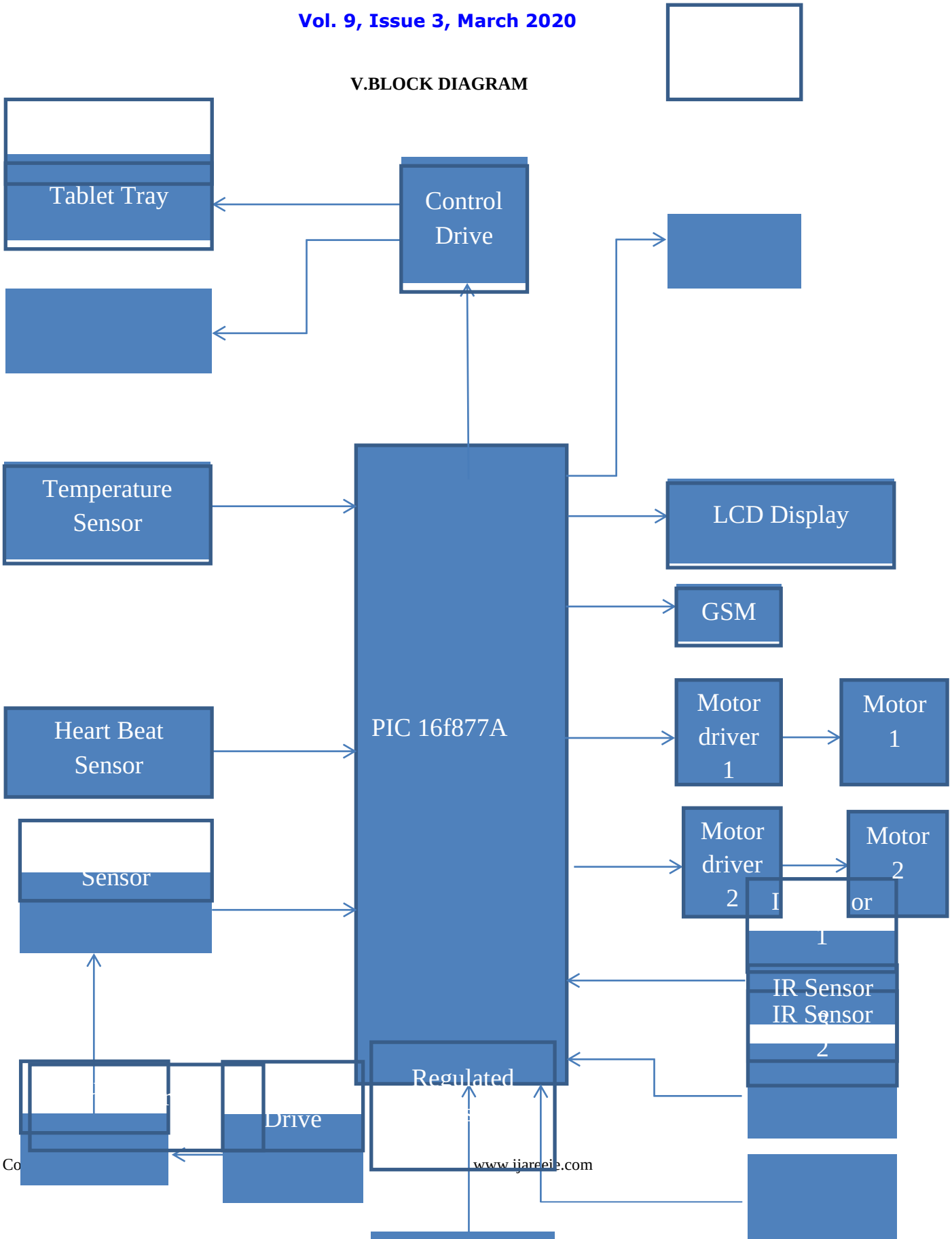
V.BLOCK DIAGRAM



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The tablet tray is also connected to the microcontroller in which it is programmed to open at the correct time in order to provide proper medication for the patients. This tablet tray setup may consists of three or more tablets according to the requirements of the patients. This whole setup is moved with the robotic control mechanism to reach the patients for providing medicine at right time. If any obstacles is detected, the IR sensor which is placed in the left, right and forward will adjust itself and reach to the patients. If a person is found to be as a obstacle, it will wait for 5 seconds to press the pass button, if not it will move accordingly.

IX.EXPERIMENTAL RESULT

This project have been tested in the hospital and college environment. The robotic concept plays a vital role in this project by providing a medicine to the patient at the right time. This test case had been tested to the virus affected patients in the hospital which is developed for the welfare of the patients. The additional development of this project will lead to higher price by keeping many developed sensors in it. Thus the project has been done successfully which can be implemented in hospital for regular usage to provide medicines for the patients at proper timing.

X.CONCLUSION

The final solution of this complication is given by the combination of both the health care monitoring system and smart pill box. This method is derived by combining the two experiments. This concept of robotic setup is mainly due to the enhancement and welfare of patients in providing proper medications at right time.

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