

Iot Based Contact Lens Pressure Measurement System



S.Lakshmipriya, V. Parvathy, C.R. Suganya Devi, M.Abinaya, A. Shyamala Prasanna

Abstract: The pressure is the main defect for all the health issue in the entire world. So, the literal measurement of the pressure is the main factor. The manual measurement of the pressure takes so long. Thus the proposed system here is a great effect and time to consume all of the drawbacks in the entire world of ocular health care monitoring. The system uses a polymer called PDD in which they are nontoxic element and can easily be disposable and it does not produce any irritation to the eyes and it's been a great liable one for the lens production. In which they cannot harm the human eye and can be a beneficial factor for the eye. Thus they are of low cost and can be easily used by the patients without any risk factor in sense of the usage. It transmits the data through the IoT, by an RFID sensor and also to the Personal computers nearby at the range of the sensor modeled over by the ideas of the system in their ability of the defined pressure in the modeled design. The system is over half success in the nanoscale technological development in and around the world of automation. Thus the system is a boot to the world of the technological era and the sooner applications in the area of automation. And it's a great leap towards the beneficial era of science and development in the upside world of the days to overcome in their criteria of wittedness.

Keywords: RFID sensors, IoT, Polymer.

I. INTRODUCTION

The important issue in our body is the blood pressure which is the unreliable factor of all causes and many ailments to the human body and mankind of the society. Thus the doctors and the scientist were indulging to present a module for the detection and prevention of high pressure either in the means of the protruding the automation in the field of the health care. Then they can also be the main problem for the human body to get stabilized in all the cases. The proposed system is a greater efficient one for the measurement of both systolic and diastolic pressure [1]. The systolic blood pressure is been measured by the measurement of blood flow in the blood vessels.

The diastolic blood pressure is measured by the blood flow in the nervalcular region. In such cases, once of all the retinal valves exhibit the both pressure. The normal pressure of the human body is about 120/80mmhg. The highest systolic pressure is about 129mmhg and the diastolic pressure is about 84mmhg where we called the hypertension and the low pressure on the measure is called hypotension [1].

The hypertension and the hypotension are both the cases should be rectified at the earlier stages. A proper medication is to been taken for the patients in the hospitals or in the home.

II. LITERATURE SURVEY

The MIT technology panel of global issues cited a factor of producing the contact lenses for the glaucoma measurement in the recent years. Thus this is the possible way to reduce the color blindness in the patients and can also measure the glucose. It is doesn't need the glucose meter to measure the glucose without the blood. It needs just a contact lens to measure the glucose. Neither it nor either needed the blood or the glucose or the painful way of measurement [2]. The doodle company makes a wide brand of the IoT devices which controls all the nanoscale measurements also. The nanoscale measurement is the main effect in designing the system but it can be a great challenge in the design of the system with their specification. The main aim of the system in which, we are using the RFID sensors that can be easily managed by connecting to the cloud. And the system so defined will have a better efficiency and report [2].

III. COMPONENTS REQUIRED:

1. RFID sensors
2. Polymer
3. IoT

The RFID sensor is the wireless sensor used for the transmission of the data to the desired system of the range of the prescribed systems. The main aim of the RFID sensor transmits the signal to the honeycomb of Personal computer or the others like the cloud and all [3].

The polymer used here is called the PDD which is soluble in the liquids at high temperature and can be solidified at the moment of cooling. Thus the solidification of the polymer can be used for the practical use of the systems for making the contact lens [3].

The IoT is the main integral part of the system in which they connect to the RFID sensor to the Personal computer and to the data's that are stored in the cloud. At once as the data gets stored in the cloud it can be viewed through the Personal computer or the mobile phones [4].

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IV. WORKING

The proposed system is a wide range of useful implementation of the monitoring the pressure in the human body. The monitored pressure is the ultimate accurate value of all. The system not only divines in monitoring the pressure it also prescribes the correct medicine to the user at once as an alert message to the user.

The user is been alerted to the messages on the mobile phone through the IoT. The pressure and the medicine prescribed will be given as a message [5].

The database for the high-pressure medicine and low-pressure medicine under the prescription of the doctor’s advice will be given to the IoT cloud which in turn consolidates in providing so [6].

The proposed system is been made of the polymer-based resins in which the resin becomes liquefied when shown to the UV light at high temperature. The liquefied material is been solidified for the special purpose called the polymer of contact lenses.

The contact lenses are a wide variety of the system in which they get emulsified into a linear and unbreakable material for the production of the lenses [7].

The lenses are printed with a basic voltage circuit and the voltage circuit exhibits a voltage in accordance with the movement of the retinal valves and their pressure.

The retinal pressure can be calculated by the following formula, [8]

$$P = (V/\text{retinal pressure exhausted}) * 100$$

P – Pressure of the blood in mm
V – Velocity calculated

The velocity exhausted will be only in the nm scales thus it should be converted into the normal blood pressure range. It can be seen by the following table 1 for the systolic pressure.

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	(NORMAL)	(MEASURED)
1.	80mm/hg	0.02
2.	81mm/hg	0.05
3.	82mm/hg	0.08
4.	83mm/hg	0.08
5.	84mm/hg	0.12
6.	85mm/hg and above	0.17

Table: 1 diastolic pressure measurement.

S.NO	PRESSURE (NORMAL)	PRESSURE (MEASURED)
1.	120mm/hg	0.22
2.	121mm/hg	0.24
3.	122mm/hg	0.26
4.	123mm/hg	0.28
5.	124mm/hg	0.29
6.	125mm/hg	0.31
7.	126mm/hg	0.33
8.	127mm/hg	0.35
9.	128mm/hg	0.36
10.	129mm/hg	0.36
11.	130mm/hg and	0.40

Table: 2 systolic pressure measurement.

The working of the system is given in the flow diagram and the block diagrams given below. The measurement of the system is been analyzed for the pressure through the voltage supply provided by the numerous number of the measurement made by the analog systems placed before the nanoscale measurement in the system.

The phased system here is the reliable one for the scaling but if it switches over to the nanoscale it makes its best effort system to make it more working under the perseverance of the output produced at the system.

The system under working situation no needs more temperature for the measurement. It just needs the room temperature for the measurement. The system doesn’t produce any irritation to the eye. The system is been printed to the polymer resin and cooled to the extent and cut into the pieces of the lens structure.

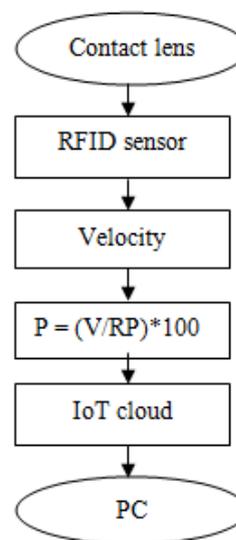


Figure: 1 Flow diagram of the proposed system

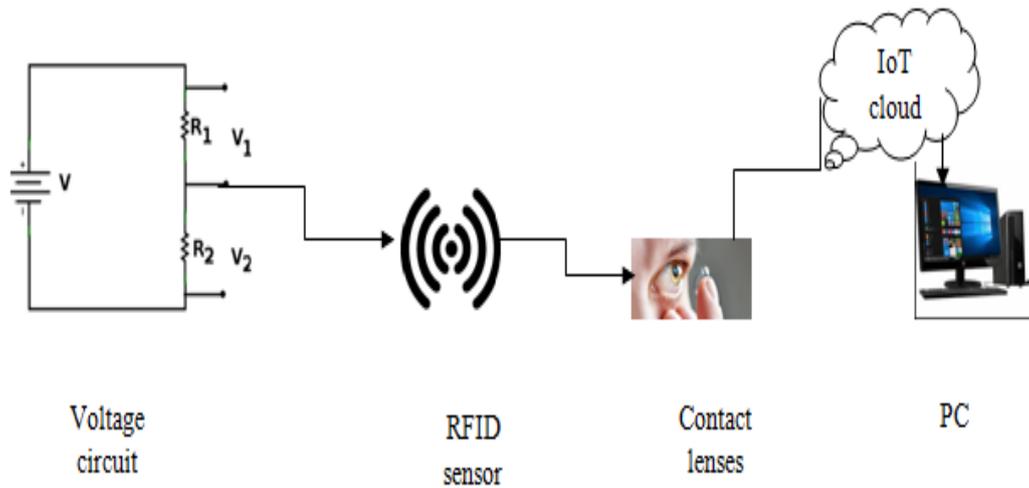


Figure: 2 working on the proposed system

The fig:2 explains the working of the proposed system in which the voltage circuit embedded in the contact lens gets the pressure change due to the blood vesicles' and produces a voltage which is been sent by the RFID sensor to the PC and then converted as the regular blood pressure and can be evolved into the IoT system.

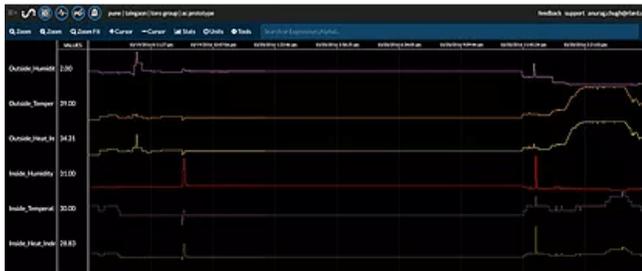


Figure: 3 analog output of the system



Figure: 4 proposed system model

The fig:3 is the analog version output of the proposed system and can be identified by the varying field of the pressure in the system and it's just an assumption to the proposed system.

V. RESULT AND DISCUSSION:

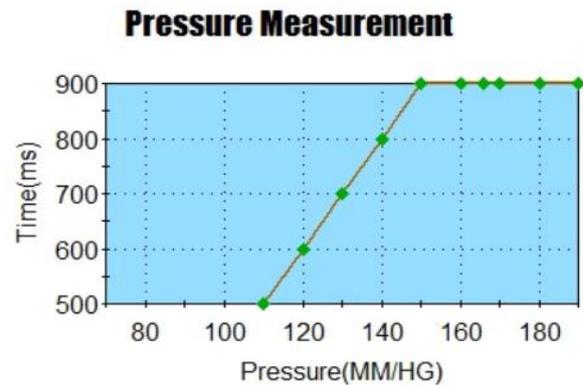


Figure: 5 Pressure measurements Monitoring Graph

When the Constant retinal dilation is been focused in the same area then the point of pressure increases with a constant time period. The Pressure relies on the matter or the substance to which the eyes are been accustomed to or they get stacked to or they are indulged with the system of usage. The retinal dilation increases the pressure with respective to time is been identified from the abive graph.

VI. CONCLUSION

The proposed system needs some accurate changes due to its higher resolution and nanoscale technology. They produce an accurate result for the prescribed values and they intimately produced good results. They produce a better reliable method of the production of the voltages in the sense of finding the pressure that is been exhausted to the polymer circuitry.

VII. FUTURE SCOPE

The system can also be extended for temperature, heartbeat measurement and more.

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