

# International Journal of Innovative Research in Science, Engineering and Technology

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## Glucose Flow Control Using WSN and Keypad

Dr.K.Helen Prabha<sup>1</sup>, Santhosh Kumar V<sup>2</sup>., Rudhranayahan B<sup>2</sup>., and Rahul S<sup>2</sup>.

Assistant Professor, Department of Electronics and Communication Engineering, R.M.D Engineering College,  
Chennai, Tamil Nadu, India<sup>1</sup>

Student, Department of Electronics and Communication Engineering, R.M.D Engineering College, Chennai,  
Tamil Nadu, India<sup>2</sup>

**ABSTRACT:** It is known that the technological advancements are increasing at a faster pace. But the utilization of these technologies is very low in various sectors. It is known that the technology in medical industries is gradually increasing. But various sectors in medical industries needs manual operations like glucose level control, patient monitoring etc. So we propose a system where the glucose control level is operated with the help of technology. We here utilize a controlling system using WSN and also with keypad.

**KEYWORDS:** Glucose Flow, WSN, Keypad.

### I. INTRODUCTION

The evolution of sensing and measuring systems leanstowards more ubiquitous and mobile solutions. It makethe evolution of healthcare to a more personalized one, feasible. Personalized healthcare offers monitoring/coaching ofthe patients in their own environments, i.e. the deploymentof personalized remote monitoring systems (tele-care) andmobile health solutions. These systems and solutions requiremore intelligent physiological sensors, characterized by lowpower consumption, and advanced wireless communications. Advances in wireless communications are required in orderto connect the physiological sensors deployed in the patient'senvironment and in wearable wireless body area networks. Thecapabilities of these solutions are highly extended. The existing system fails to provide the glucose flow control for the patients. The system just provides the opening and closing of the glucose flow for patients. This doesn't provide the flow control of glucose. The disadvantages of the system is the excess of glucose can be provided to human than the limit and the flow control is not done.

### II. LITERATURE SURVEY

Communication and information access defines the basis to reach a personalized health end-to-end framework. Personalized health capability is limited to the available data from the patient. The data is usually dynamic and incomplete. Therefore, it presents a critical issue for mining, analysis and trending. For that reason, this work presents an interconnection framework for mobile Health (mHealth) based on the Internet of Things in terms of software, this interconnection framework presents a novel protocol, called YOAPY, for an efficient, secure, and scalable integration of the sensors deployed in the patient's personal environment. This work presents the architecture and evaluates its capability to provide continuous monitoring, ubiquitous connectivity, extended device integration, reliability, and security and privacy support. The proposed interconnection framework and the proposed protocol for the sensors have been exhaustively evaluated in the framework of the AIRE project, which is focused on patients with breathing problem. This evaluates for the proposed protocol the data aggregation mechanism level, Round-Trip delay Time, impact of the distance, and the impact of the security. It has been concluded that secure continuous monitoring is feasible with the use of the proposed {YOAPY}} aggregation mechanisms and the capabilities from the proposed interconnection framework [1].

The healthcare industry must improve its delivery methods and reduce costs to address current and anticipated needs. Various technologies could help by extending treatment and care beyond traditional clinical settings into personal and

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home settings. However, creating such a personal telehealth ecosystem will require interoperability. Device connectivity to enterprise services is currently very proprietary. In an effort to develop interoperability guidelines for the emerging personal telehealth ecosystem, we formed the Continua Health Alliance ([www.continuaalliance.org](http://www.continuaalliance.org)), an international alliance of more than 133 companies. The guidelines will be based on a comprehensive set of industry standards, which will serve as a blueprint for integrating a product into the ecosystem [2].

Disease management programs, which use no advanced information and computer technology, are as effective as telemedicine but more efficient because less costly. We proposed a platform to enhance effectiveness and efficiency of home monitoring using data mining for early detection of any worsening in patient's condition. These worsening could require more complex and expensive care if not recognized. In this letter, we briefly describe the remote health monitoring platform we designed and realized, which supports heart failure (HF) severity assessment offering functions of data mining based on the classification and regression tree method. The system developed achieved accuracy and a precision of 96.39% and 100.00% in detecting HF and of 79.31% and 82.35% in distinguishing severe versus mild HF, respectively. These preliminary results were achieved on public databases of signals to improve their reproducibility. Clinical trials involving local patients are still running and will require longer experimentation [3].

Cardiovascular diseases (CVDs) account for 45% of all deaths in the western world according to the 2004 World Health Organization statistics report. Heart failure (HF), CVD's primary paradigm, mainly affects people older than 65. The European MyHeart Project's mission is to empower citizens to fight CVD by leading a preventative lifestyle and allowing early diagnosis. This work presents the iterative design and development of the HF management system, part of MyHeart Project. The system daily measures vital body signals to assess HF. The methodology applied herein has involved stakeholders in an iterative process: concept validation, feasibility, efficiency, patients' experience, and patients' acceptance. The final solution allows patient self-management of their chronic condition [4].

In [5] a new location recognition algorithm for automatic check-in applications (LRACI), suited to be implemented within Smartphones, integrated in the Cloud platform and representing a service for Cloud end users. The algorithm, the performance of which is independent of the employed device, uses both global and hybrid positioning systems (GPS/HPS) and, in an opportunistic way, the presence of Wi-Fi access points (APs), through a new definition of Wi-Fi FingerPrint (FP), LRACI allows automatic check-in in a given location only if the users' Permanence is larger than a minimum amount of time, called Stay Length (SL), and may be exploited in the Cloud. For example, if many people check-ins in a particular location (e.g., a supermarket or a post office), it means that the location is crowded. Using LRACI-based data, collected by smartphones in the Cloud and made available in the Cloud itself, end users can manage their daily activities (e.g., buying food or paying a bill) in a more efficient way. The proposal, practically implemented over Android operating system-based Smartphones, has been extensively tested. Experimental results have shown a location recognition accuracy of about 90%, opening the door to real LRACI employments. In this sense, a preliminary study of its application in the Cloud, obtained through simulation, has been provided to highlight the advantages of the LRACI features

### III. SYSTEM DESIGN

The proposed system overcomes the drawbacks in the existing system. The system consists of a Solenoid. The purpose of solenoid here is to control the flow of glucose level. The flow of glucose is controlled with the help of the controller. The commands to the controller can be provided in two different forms. One way of controlling the glucose flow is done by providing commands through the IoT connected to the controller based on the sensor values. The mode has to be selected using IoT module. The flow sensor is used to know the exact glucose flow from the glucose bottle. The advantages of the system is that the flow is perfectly controlled and automated glucose flow control is performed. The hardware required for the system implementation are the power supply, micro-controller, Bluetooth, UART, LCD, driver circuit, Keypad, Solenoid, and flow sensor.

Transmitter

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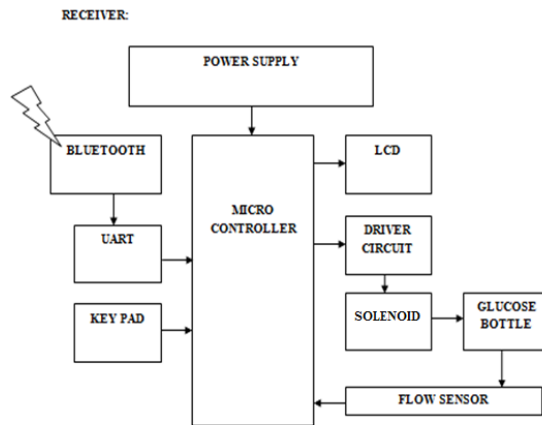
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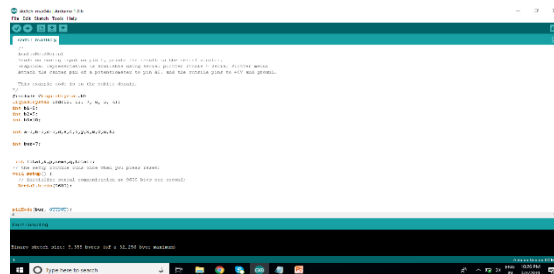
Receiver



The circuit has a receiver and a transmitter. The controller in the receiver is connected to the Bluetooth through the UART. The Keypad and LCD module is also connected to the controller. The flow sensor and the driver circuit is connected to control the glucose flow in the glucose bottle using a solenoid value.

## IV. RESULTS AND DISCUSSION

The Glucose flow has been successfully controlled using WSN and the Keypad. The output code implemented is shown in the figure.



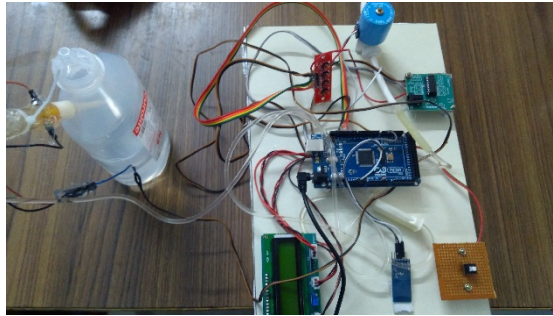
After connecting all the components to the microcontroller, power supply is switched on. The assembled hardware connections with applied power supply is shown in the figure below.

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The output at the LCD display for Keypad control with M=3 and the Count = 10 is shown below.



### V. CONCLUSION

We have controlled the flow using minimum number of drops for ex., 10,15,30. The same can be implemented in hospital by assigning more number of drops to the patients accordingly. There should be some alignments so that does not enter the glucose flow pipe. As it is a manually made flow sensor, a technology should be found to calculate the value of a single drop.

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