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An Efficient and Optimal Systems For Medical & Industries With Concept of IOT

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ABSTRACT
Its quit interesting to starts with some philosophical manner rather than the aim of paper, that is, human kind likes more and more simplified life in their daily activities. The people like, simplification in cooking, travel, education, fashion design, dressing, information availability about certain things, communication from one place to another and so on. That means, the people like intelligent automated life. In contrast artificial things can interact with the human kind and solves their desires. For example, someone may have lost something, somewhere, but they forget where they lost. The difficulty here is, how find the thing, someone may give the solutions RFID technology but it works in certain range. So from the discussions, we need, the autonomous mechanism, that can trace out the locality or information regarding to what we lost? In simple manner, we need a common platform to integrate entire world of thing. For a little while, the common platform is internet and hence we labeled Internet of Things(IoT). That's what, the paper is going to deal. So the principal objective is to monitoring the thing of parameters from anywhere in the world. The paper is not aimed to integrate entire world of things right now but dedicated to two fields, medical & small, medium enterprises. In medical field, monitor the patient through camera interface and patient's moments using WSN interface. And in case of SM Enterprises monitors, temperature, water level, machine motion detection using WSN and visual through Camera Interface. The paper is built with high speed and low cost Raspberry-Pi Controller
Index Terms: Internet of things (IoT), Wireless Sensor Networks(WSN), SM Enterprises, Medical.Raspberry-Pi Controller.

I. INTRODUCTION

In the present days, the world come across a wide variety of electronic products. We are using the electronic goods easily to our needs. The pity good examples are TV channel controllers, cellular phones, washing machines, Automatic door opening systems etc.But in practice, the above devices have at least one or more than one programmable devices to interact with the external world with high efficiency as effectively as possible. The above devices are the category of embedded systems and they can do the service in qualitative time. That means, the system can work in time, need not to wait for long time to the action.

Let us have a look on, how an embedded system is functioning, what are the characteristics and how best

complex it could be in structure? Consider the example of a cellular mobiles as shown below.

Figure 1.1 Cellular Phones

Think in deep each of these embedded products, those are digital camera or an FM radio and telephones has a number of functioning modes, they may as follows

- It may have the facility to adjust the zoom of the view,
- It has facility to reduce the screen brightness in better manner,
- It has the facility to change the ring tone as you like,
- It has to relay a particular song from favorite
- FM station to your dear friend through your cellular mobile.
- Cellular mobiles may also use as a calculator, address book, emailing purpose etc.

The change in the functionality can be achieved through the devices called flexible device. The flexible devices are arranged in the circuits they woks like, the heart of the circuits that is named as Microprocessor well as known to us as an Embedded Processor and cellular mobiles housing huge a number of functionalities, this can be is known as an Embedded System.

The embedded systems intended for to satisfy the requirement of a number of clients in the same time, the embedded system is work with a time-constraint, i.e. the system has to fulfill everybody with a minimum delay. We call, the kind of work as Real Time.

We say that embedded systems do not make us to wait too long to take words and relaying them and at the same time receiving them, not like an email server, it might take days to receive or deliver message in case of the network is congested or slow in speed.

For example, the cellular mobile phones are the Real Time Embedded System.

Real time generally means qualitative behavior of real physical clock.

Let's pick up an example that the time struck by clock (Consider it may be fast or late). The timings specified by requirements. One might like to call someone in middle of the night and send that person to movie. The time requirements mentioned by the user is the real time to the embedded system.

The Embodied physical phenomena are those that by happens in nature occur in real time and real space.

It may be defined in another may, A many systems are combined together to do a specific work in real time.

The Real Time Embedded Systems are in contrast the integration or summation of subsystems to do a specialized work coherently. So in broad manner we call these systems are embedded real time systems. ERTS as a special word in meaning, they should represent systems in the real world. Whatever it may be we shall conceder about those systems, which uses programmable devices such as microprocessors or microcontrollers to do particular tasks. We characterize in way they function that as follows.

The meaning of single functioned is doing of particular tasks. The ERTS is generally mean for very particulate tasks. More generally a particular purpose microprocessor executes a program over and over again for a particular purpose. The customer eager to change the functionality of systems, for example changing the cellular mobile phone from camera to conversation mode or calculator mode the program gets terminate and a new program is performed, this carries the customer the request function. These functions are monitored and controlled by using an embedded operating system called as Real Time Operating System (RTOS). The RTOS have much simple in complexity but more rigid constraints as compared to the fundamental operating systems those are Micro Soft Windows and Unix etc.

The parameter on the design and marketability of ERTS are clumsier than non-real-time, non-embedded counter parts. The Time domain parameters are the fundamental thing that is taken care while developing an embedded system. Size, weight, power consumption and 4 cost are the pity good interesting points.

So Many embedded computing systems continually react to a smart change in the system's environment and may compute certain results in real time without delay interruption. Let's have an example, a car's cruise controller continually monitors over time and respond to speed and brake sensors to control. Embedded

systems measures acceleration or deceleration amounts continuously within a small time; a delay computation would result in a failure to maintain control of car. In mention a desktop computer system particularly focuses on computations, with relatively infrequent (from the computer's perspective view point) responses to input computing devices. In summation, a delay in a computation, makes the user to feel inconvenience generally does not result in a system failure.

The general purpose computers have generic architecture cannot be used for a Real Time

Embedded Systems. There are so many architectures are available from different manufacturers.

Whatever it may, for easy understanding purpose we can go through some common architectures which represents the system functionalities as well. The system can be hierarchically divided into subsystems. Every sub system may be further bi fabricated into smaller systems. In mention each smaller systems consist of various discrete parts. The integration of discrete components is called Hardware configuration.

Few parts are programmable and therefore need a place to keep these programs. In ERTS the programs may keep in on-chip or on-board non-volatile memory. The programs are the part of the Real Time Operating System (RTOS) and continually run over a time until the devices is receiving power. A part of the ERTS may executes itself, in the stand-by mode the device takes a very small amount of power from the battery. This is named as the sleep mode of the system.

The hardware and software coexist in a coherent behavior. Tasks can be carried out by software and hardware affectively to the design process of the system.

Let's pick up an example a multiplication action may be done by hardware or it can be done by software through repeated additions. The hardware based multiplication improves the speed at huge cost of increases complexity of the arithmetic logic unit of the embedded processor. And at the same time the software based multiplication is

slower but the ALU is pity simpler to design. These are some problems of the conflicting requirements which are need to be resolved on the requirements as imposed by the overall system. This is named as Hardware-Software Code sign or simply Code sign.

Here we shall consider both the hardware and the embedded software in the same spirit and treat as systems or subsystems. After that, we shall know where arrange them together and how.

SCADA:

The SCADA systems are intended for to monitor and control devices in industries such as telecommunications, waste control, oil and gas refining company, Transportation Corporation and Medical. These systems concentrate the transfer of data between a SCADA central computer and a number of Remote Terminal and Programmable Logic Controllers, and finally the central host and the operator terminals. A SCADA system collects information (such as finding of a leak on a pipeline has occurred), sending the information back to a central monitoring site, after that alerts the home station where the leak has occurred, take up necessary control and analysis, like as determining if the leak is so much critical, and display the information in a logical, organized in readable fashion.

Those systems are relatively simple, such as, one can monitor environmental conditions of a pity good small office building, or might be very complex, such that a system that monitors every activity in a nuclear power plant and another example is the activity of a municipal water system. Fundamental, SCADA systems have been made for the use of the Public Switching Network for surveillance purposes.

The Wireless sensor networks (WSNs) have been become a hot research in recent years clustering is considered in effective approach to reduce network overhead and improve scalability as well. The Wireless sensor network is one of thepervasive networks which can sense our environment through the parameters like heat, temperature, pressure, etc.

II. LITERATURE SURVEY

In the year 2013, Benini.Lproposed method of ARM Controller is used to control the all the sensors in contrast. And also there is no auto lock system in that MCU. The proposed method completely overcomes the drawback present in existing system by using predominant wireless sensor network. The system is by using Raspberry-Pi micro controller which supports different features and the step by step procedure or for the development of industrial automation systems. The Raspberry-Pi controller we can connect all types of sensors and connect 8-bit microcontroller based sensor network to Raspberry-Pi controller using different wired or wireless technology as well.There are many open source libraries and tools are available for ARM-Linux wireless sensor network development and controlling as well. We can completely monitor and control the wireless sensor network remotely using internet &web server. The system describes the development of a wireless medical and SM enterprises environment measuring temperature, humidity, atmospheric pressure, soil moisture; water level and light detection. Here the wireless connection is implemented to acquire data from the different sensors, in summation to allow set up difficulty to be as reduced. And the best approach is

Wi-Fitechnology,send the sensors data to authorized person.

III. ARCHITECTURE AND SYSTEM DESIGN

The wireless sensor platform targeted for instrumentation and predictive maintenance systems is presented. And simple architectures are shown below for the different environment.

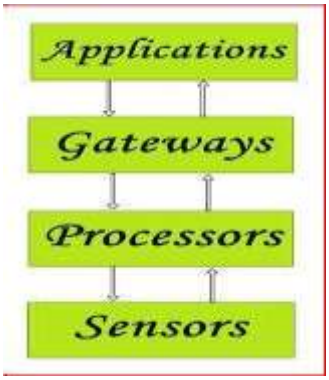

Figure-1: Simple architecture of IoT

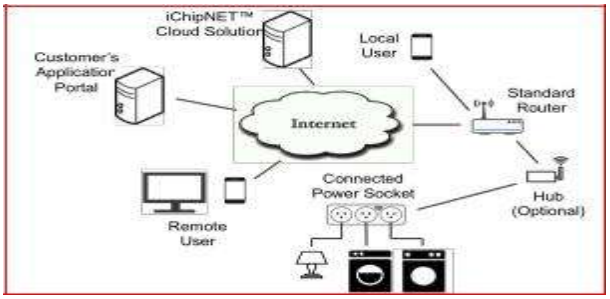

Figure-2: Another architecture of IoT

Figure-3: Vehicle to vehicle communication architecture of IoT

Figure-4: Car to Car communication architecture of IoT

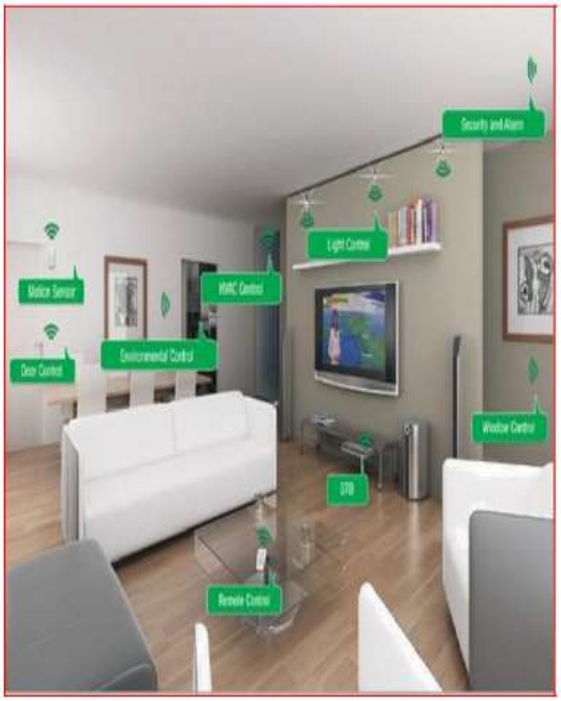

Figure-5: Hardware to hardware communication in home architecture of IoT

Figure-6: Communication between bowls architecture of IoT

Figure-7: Complete architecture of IoT

Figure-8: Complete architecture of IoT

IV. HARDWARE IMPLEMENTATION

In the present method of ARM Controller is used to control the all the sensors in contrast. And also there is no auto lock system in that MCU. The proposed method completely overcomes the drawback present in existing system by using predominant wireless sensor network. The system is by using Raspberry-Pi micro controller which supports different features and the step by step procedure or for the development of industrial automation systems. The Raspberry-Pi controller we can connect all types of sensors and connect 8-bit microcontroller based sensor network to Raspberry-Pi controller using different wired or wireless technology as well. There are many open source libraries and tools are available for ARM-Linux wireless sensor network development and controlling as well. We can completely monitor and control the wireless sensor network remotely using internet & web server. The system describes the development of a wireless medical and SM enterprises environment measuring temperature, atmospheric pressure, , humidity, soil moisture; water level and light detection. Here the wireless connection is implemented to acquire data from the different sensors, in summation to allow set up difficulty to be as reduced. And the best approach is Wi-Fi technology, send the sensors data to authorized person.

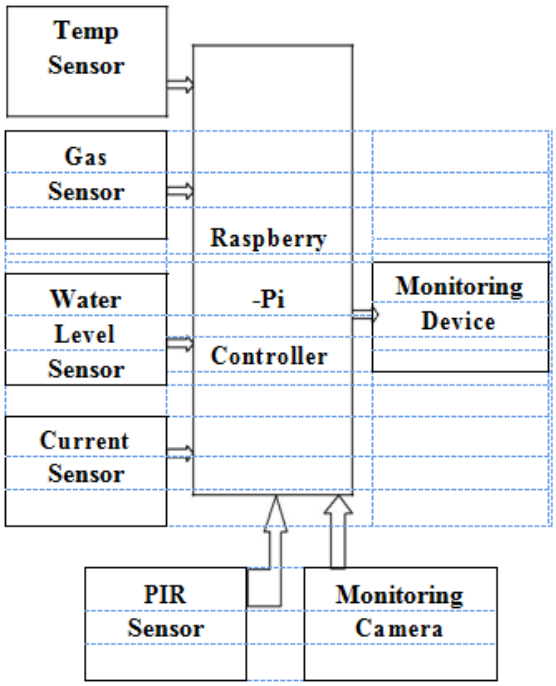

Figure-8: Block Diagram of Proposed system.

From the block diagram, Its quit interesting to starts with some philosophical manner rather than the aim of paper, that is, human kind likes more and more simplified life in their daily activities. The people like, simplification in cooking, travel, education, fashion design, dressing, information availability about certain things, communication from one place to another and so on. That means, the people like intelligent automated life. In contrast artificial things can interact with the human kind and solves their desires. For example, someone may have lost something, somewhere, but they forget where they lost. The difficulty here is, how find the thing, someone may give the solutions RFID technology but it works in certain range. So from the discussions, we need, the autonomous mechanism, that can trace out the locality or information regarding to what we lost? In simple manner, we need a common platform to integrate entire world of

thing. For a little while, the common platform is internet and hence we labeled Internet of Things(IoT). That's what, the paper is going to deal. So the principal objective is to monitoring the thing of parameters from anywhere in the world. The paper is not aimed to integrate entire world of things right now but dedicated to two fields, medical & small, medium enterprises. In medical field, monitor the patient through camera interface and patient's moments using WSN interface. And in case of SM Enterprises monitors, temperature, water level, machine motion detection using WSN and visual through Camera Interface.

Figure-9: The Raspberry-Pi Board.

V.RESULT AND DISCUSSION

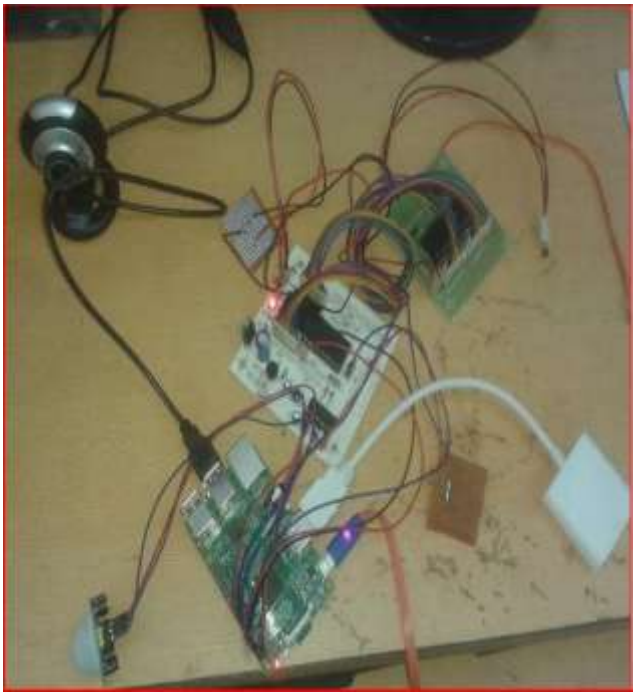

Figure-9: Hardware implementation of IoT

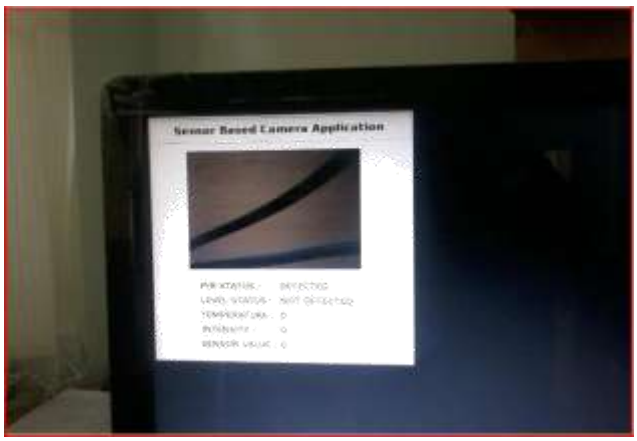

Figure-10: Interface ofIoT results 1

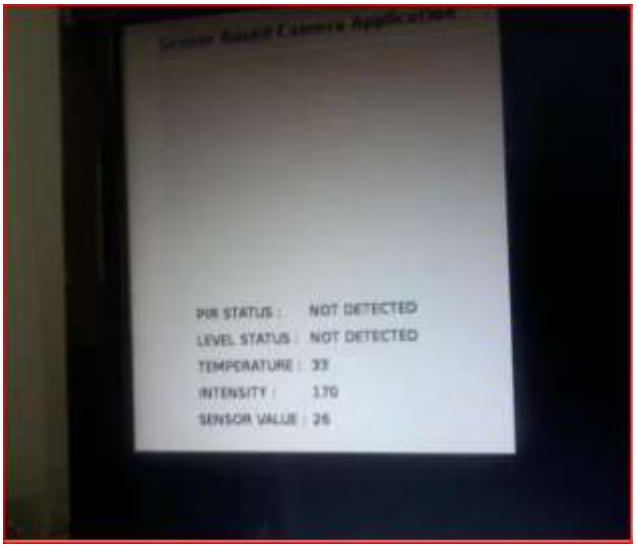

Figure-11: Interface ofIoT results 2

Figure-12: Interface of IoT results 3

From figure9 to figure 12 clear image of parameter measurements which are needed in medical, small and medium enterprises in optimal

way of acquiring data. The system tackle down patient behavior and machinery monitoring. The developed prototype perfectly suitable, computes with high speed as well. This system enables us to simplify our job in more desirable way. We can monitor each and everything from anywhere in the world. In this system, tried to measure different parameter like temperature, water level, and patient position detection, light intensity based things, motion predictions as well.

VI. CONCLUSION AND FUTURE WORK

In infer, the entire world looks ahead for to autonomous the world. That means, the things itself interact themselves and come to one conclusions and do accordingly. In simplified manner, integrate entire world to common platform with awesome security, we can access which and every from home itself. This phenomena we call Internet of Things (IoT), that's what we did in this paper. The main advantages are implement at low cost and with good computational capabilities at small and medium scale level.

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