INTERNET OF THINGS USING CHRONOS EZ430

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Abstract— **This paper deals with the application of a wearable wireless sensor in customizing personal space by a closely operating system of transceiver, a personal computer connected to all the electrical devices. As we will be mentioning the already pertaining features of the wearable sensor and how the data being sensed will be transferred to the user computer through a transceiver and then processing the data with the customized information present in the desktop room will be altered, to mention a few: controlling light intensity, air conditioning and so on connected through the centronics port of the desktop.**

Keywords— **Wearable sensor, chronos EZ430, main power circuit, centronics.**

I. INTRODUCTION

The **Internet of Things** (**IoT**), also called Internet of Everything or Network of Everything, is the network of physical objects or "things" embedded with electronics, software, sensors, and connectivity to enable objects to exchange data with the

production, operator and/or other connected devices based on the infrastructure of International Telecommunication Union's Global Standards Initiative. The Internet of Things allows objects to be sensed and controlled remotely across existing

network infrastructure creating opportunities for more direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. Each thing is uniquely identifiable through ts embedded computing system but is able to interoperate within the existing Internet infrastructure. Experts estimate that the IoT will consist of almost 50 billion objects by 2020.

We specifically concentrate on HOMEAUTOMATION where we use a wearable sensor to customise our personal space. We describe about the sensor in the next section.

II.CHRONOS EZ430:FEATURES

The wearable sensor used in our project to control our personalized space can be directly interfaced with the desktop or laptop we use. The features that we highlight in our project of chronosEZ430 are:Fully reprogrammable development environment. It is integrated with more than 1GHz wireless transceiver for custom wireless applications.Highly integrated, re-programmable watch development tool includes on-board 3-axis accelerometer, pressure sensor, temperature sensor, battery voltage sensor.96-Segment LCD display driven directly by CC430.Can be paired wirelessly with heart rate monitors and pedometers or other devices based on RF transceivers like the CC430 or CC1111 during the development process.Includes an eZ430 USB emulator that

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connects the Chronos to a PC for real-time, in-system programming and debugging.

IV.HOME AUTOMATION

The popularity of home automation has been increasing greatly in recent years due to much higher affordability and simplicity through smartphone and tablet connectivity. The concept of the "Internet of Things" has tied in closely with the popularization of home automation.

A home automation system integrates electrical devices in a house with each other. The techniques employed in home automation include those in building automation as well as the control of domestic activities, such as home entertainment systems, houseplant and yard watering, pet feeding, changing the ambiance "scenes" for different events (such as dinners or parties), lighting control system, and the use of domestic robots. Devices may be connected through a home network to allow control by a personal computer, and may allow remote access from the internet. Through the integration of information technologies with the home environment, systems and appliances can *communicate* in an integrated manner which results in convenience, energy efficiency, and safety benefits.

Automated "homes of the future" have been staple exhibits for World's Fairs and popular backgrounds in science fiction. However, problems with complexity, competition between vendors, multiple incompatible standards, and the resulting expense have limited the penetration of home automation to homes of the wealthy, or ambitious hobbyists. Possibly the first "home computer" was an experimental home automation system in 1966.

V.COMBINING HOME AUTOMATION WITH EZ430

As already mentioned, we proposing the idea of automating the home appliances and devices through the wearable sensor i.e.EZ430.The EZ430 CC430 comes with an emulator which connects the sensor to the desktop or laptop and thus transferring the data required to make specific changes in the automated room being considered. The data here is, bodily pressure to alter the room environment, temperature to control air conditioning, acceleration to detect the pace at which the user approaches.Now, the devices are connected to the desktop through centronics port and hence thereby controlled accordingly from pre-programmed information. Centronics port is elaborated in the next few paragraphs:-

Parallel port is a simple and inexpensive tool for building computer controlled devices and projects. The simplicity and ease of programming makes parallel port popular in electronics hobbyist world. The parallel port is often used in computer controlled robots,Everybody knows what parallel port is, where it can be found, and for what it is being used. The primary use of parallel port is to connect printers to the computer and is specifically designed for this purpose. Thus it is often called as printer Port or Centronics port (this name came from a popular printer manufacturing company 'Centronics' which devised some standards for parallel port).

You can see the parallel port connector in the rear panel of your PC. It is a 25 pin female (DB25) connector (to which printer is connected). On almost all the PCs only one parallel port is present, but you can add more by buying and inserting ISA/PCI parallel port cards.

The interface circuit shown in figure 1 is drawn for only one device, being controlled by D0 bit at pin 2 of the 25-pin parallel port. Identical circuits for the remaining data bits D1 through D7 (available at pins 3 through 9) have to be similarly wired. The use of opto-coupler ensures complete isolation of the PC from the relay driver circuitry.

A main controller circuit connects the desktop to the complete range of devices and appliances we intend to automate. The circuit is connected to the desktop through the above mentioned centronics port and on the other end all the devices are connected to this very controller circuit.

VII.CONFIGURING WITH DESKTOP

The Chronos EZ430 848 series development kit comes with a RF transceiver that receives the data and is in turn configured to the desktop. Following are basic steps involved in configuration and installing the configuration file.

1. Unzip the archive and run Chronos-Setup.exe.

2. Respond to the prompts to install the software. During the installation a separate window opens for the Windows driver installation. Accept the driver installation.

NOTE: The eZ430-Chronos access point driver may not be certified by Microsoft. Therefore, Windows may generate a warning. Allow the driver installation to continue.

3. When installation finishes, connect the eZ430-Chronos RF USB access point to the PC and follow the Windows driver installation.

4. If prompted for the driver for the TI CC1111 Low-Power RF to USB CDC Serial Port (legacy software), or eZ430-ChronosAP (current software) allow Windows to 'Install the software automatically'. This can be done only if the eZ430-Chronos PC Software package has already been installed.
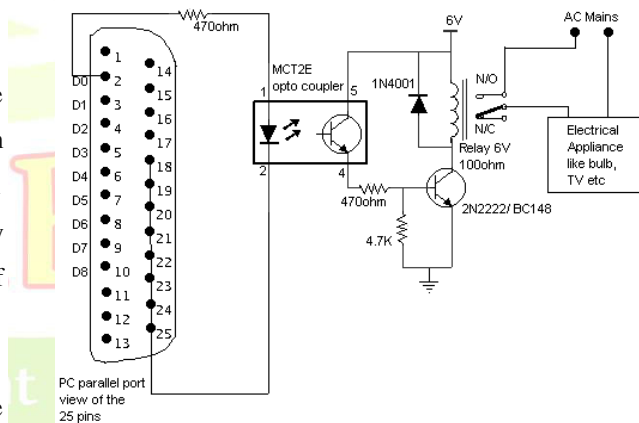
5. Open the eZ430-Chronos Control Center program. A shortcut is available on the Desktop and the Start

Menu under Programs > Texas Instruments > eZ430-Chronos > eZ430-Chronos Control Center.

After the default installation, we are installing our custom

software which takes the output of previous software as input and gives output.

VIII.ALGORITHM

Step 1: Detect the user in range and authorize

Step 2: Transfer all the respective sensor data i.e., body temperature, blood pressure, etc to the desktop

Step 3: After the desktop receives data through RF transceiver, it is manipulated into the necessary information needed.

Step 4: The customized program along with the sensory information received, selects the suitable mode.

Step 4: Mode selected is implemented in our personal space controlling the devices.

Step 5: The devices are collectively connected to a main controller circuit, which is in turn connected to the desktop through parallel port via wire.

Step 6: The On and Off inputs are given via the wires from the centronics to the power board and thus the electrical devices switched On and Off respectively.

IX.CONCLUSION

Thus using the Chronos ,RF transceiver and parallel port , we have our personal space customized automatically though the sensor and thus the Internet of Things and home automation is getting a breakthrough in the technology with low cost ,easy implementation and maximum feasibility.

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