An IOT Based Smart Alarm System

Muthappa K A[1],Akshay P[2],Abhina S[3],Anjana S[4],Shubham Jain [5]

Department of Computer Science
[1]Assistant Professor, Coorg Institute of Technology, Ponnampet, Kodagu, Karnataka, India -571216
[2,3,4,5] UG Scholar, Coorg Institute of Technology, Ponnampet, Kodagu, Karnataka, India -571216

Abstract- *Internet Of Things is becoming more and more popular day by day due to its numerous advantages. In this paper we showcase our attempt at building a low cost stand-alone smart alarm system. The Raspberry Pi is a low cost single-board computer which has recently become very popular. This paper aims at designing a basic smart alarm system using Raspberry Pi. The algorithm for the same is implemented and developed in node-js environment.*

Keywords- Smart alarm, Raspberry Pi, Internet of Things

I. INTRODUCTION

Alarm systems play a vital role in everyone's routine life. In today's busy world we don't have time to wait for anything, so why not get our things ready even before we wake up so that we need not waste time on that once we are up. In the proposed system we present a smart alarm system that can control some devices (lights, music, toaster etc) that can be turned on or off in a user defined time.

Internet of Things: Internet of Things: The Internet of Things (IoTs) is termed as linking daily objects like smart-phones, TVs, sensors and actuators to the Internet where the devices are cleverly connected together enabling latest ways of communication between devices and people, and between devices themselves.[1] Building IoTs has advanced considerably in the past couple of years since it has added a latest dimension to the world of information and communication technologies. It is anticipated that the number of devices linked to the Internet will mount up from 100.4 million in 2011 to 2.1 billion by the year 2021, growing at a rate of 36% per year. Now anyone, from anytime and anywhere can have connectivity for anything and it is expected that these connections will extend and create an entirely advanced dynamic network of IoTs. The development of the Internet of Things will revolutionize a number of sectors, from automation, transportation, energy.

II. EXISTING SYSTEM

The existing system for our project is a normal alarm where the user can set the time and nothing else. There is no scope of doing anything else than the basic alarm function. The user sets a time at which the alarm will wake him/her up. The alarm clocks available in the market are less flexible and less user friendly. A number of commercial alarm clocks, for example La Crosse WE- 8115U-S Atomic Digital Clock[2], are available.

The Rise alarm clock [3] is another product prototype which monitors and uses traffic conditions to calculate the optimal alarm time.

III. PROPOSED SYSTEM

In this paper we implement a smart alarm system with a web based interface for the user where he can set the time and add devices. The server (raspberry pi) accepts these requests from the user and does the background process of controlling the devices and setting the alarm. The user is given an add device web based window where he/she can select electronic gadgets such as lights, music player, toaster etc and set a time for them at which the gadget will be turned on or off. In this paper we have proposed to control a minimum of 4 devices which include bedroom lights, a music player, a toaster and a water heater.

Requirements for raspberry pi:

1.SD card of 8GB or more.
2.HDMI/DVI monitor for display.
3.Wi-Fi or Ethernet enabled internet connection.
4.5 volt power supply.
5.Language used node-js.
6.OS used is Raspberry pi - Rasbian

Software

Operating System: Raspberry pi comes without a pre installed OS, it uses an SD card as its storage device so it is left to the user to do download a suitable version of OS and load it into the SD card.

Programming languages: Node.js is an open source, cross-platform runtime environment for creating server-side and networking applications. Node.js applications are written in JavaScript, and can be run inside the Node.js runtime on OS X, Microsoft Windows, and Linux. Node.js also provides a loaded library of diverse JavaScript modules which simplifies the development of web applications using Node.js to a great degree.

Rasbian: Rasbian is a free operating system based on Debian, optimized for the raspberry pi hardware. Rasbian comes with more than 3500 packages, pre combined software bundled in a nice format for easy installation on Raspberry pi.

Hardware

Raspberry pi: Raspberry Pi is a cheap, credit-card sized computer that plugs into a computer monitor or TV, and uses a typical keyboard and mouse.[4] It is an able device that enables people of all ages to discover computing, and to study how to program in languages like Scratch and Python. It can do all you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games[5].

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FUTURE SCOPE

In this paper we have connected a few devices to our alarm system but in future more composite devices can be controlled and can even advance the system in to a multiple-user supported alarm. Instead of a web based interface the user could be provided with an android application which would make the process easy. A force sensor underneath the bed could be used to check if the alarm was successful or if the user turned off the alarm and went back to sleep.

Wake-up-Lighting:
A lot of alarms now come with 'wake-up lighting', which simulates a sunrise over a period before the alarm goes

off, supposedly helping the body wake up naturally, rather than suddenly with the alarm. There are alarms that can control doors and windows that can automatically close or open them according to users wish.

REFERENCES

[1]   Irena Pletikosa Cvijikj, Florian Michahelles, The Toolkit Approach for End-user Participation in the Internet of Things, Architecting the Internet of Things, Springer-Verlag, Berlin Heidelberg (2011), 66.

[2]   La   Crosse   Technology   :
http://wwwlacrossetechnology.com/308-145

[3]   BBC News, Smart alarm clock lets you lie in :
http://news.bbc.co.uk/1/hi/technology/2269144.stm

[4]   Raspberry Pi Forum: http://www.raspberrypi.org/phpBB3/

[5]   http://wiringpi.com/