IOT BASED ROBOT CONTROL USING SMARTPHONE

Shruti Verma[1], Krushna Mahandule[2], Kanchan Dhumal[3] ,Urvashi Bhat[4]

[1,2,3]Student, E&TC Dept., GSMCOE,Balewadi,Pune (India)

[4]Assistant Professor, E&TC Dept., GSMCOE,Balewadi,Pune (India)

ABSTRACT

Robotics is a emerging technology which can can be used in many applications such as manufacturing, processing operations, dangerous areas, medical environments, military, inaccessible areas etc. Also ICT applications became more complex while including various wired and wireless technologies Nowadays a robot can be integrated as an entity in the new paradigm of Internet of Things (IoT). Thus, in the IoT, a robot can be connected as a thing and establish connections with other things over the Internet. Despite some raised technical issues, the integration of robots within the IoT can offer great advantages in many fields.

Keywords- IoT, Robotic

I.INTRODUCTION

Robotics is the branch of mechanical engineering, electrical engineering and computer science that deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback and information processing. A Robotic System is a type of mechanical system, usually programmable, The links of such a manipulator are connected by joints allowing either rotational motion (such as in an articulated robot) or translational (linear) displacement.

The internet of things (IoT) is the network of physical devices, vehicles, buildings and other items embedded with electronics, software, sensors, and network connectivity that enable these objects to collect and exchange data. The IoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and result in improved efficiency, accuracy and economic benefit. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation and smart cities. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure.

II.OBJECTIVE

The objectives of the project are:-

1. To develop a system which will work in Emergency, and would record and report emergency in real time

2. To develop a system which work automatically and not require any human interference or manual setup during emergency to report it.

3. The system should convey the crucial information like person in emergency, emergency type and emergency location.

THEME

In the proposed project internet of things is interconnected with devices (robot).The robot is operated through smartphone in any hazardous location. As Robots are used to help mankind in various environments if we combine the Robots and Internet of things we can achieve more than we can think of.

Fig.1 Theme of the Proposed Project

SYSTEM DEVELOPMENT

• In the proposed project first we establish the Wi-Fi connection of smartphone with the Wi-Fi module of the robot internally.

• Then with the help of programming of ATMEGA16 microcontroller commands through the smartphone, L293D motor driver IC drives the DC motors according to our requirements.

• With the help of camera the real time videos what at that hazardous location (where human can not reach) can b captured.

• Then it sends the video to the operator for further actions.

• The block diagram of the proposed project is as under:
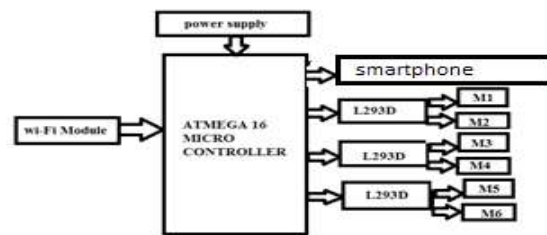
Fig.2 Block diagram of the proposed project

- **ATMEGA16 :-** Atmega16 can work on a maximum frequency of 16MHz.ATmega16 has 16 KB programmable flash memory, static RAM of 1 KB and EEPRO of 512 Bytes.

- **AVR STUDIO :-** AVR studio is an Integrated Development Environment (IDE) by ATML for Developing application based on 8 –bit AVR microcontroller. This will allow AVR studio to detect the compiler.

- **DIPTRACE :-** Diptrace is a software that allows to create simple & complex printed circuit board from schematic diagram to layout.

WI FI MODULE

Fig.3 Wi-Fi Module

In order to communicate with the Robotic arm over the internet, Wi-Fi module ESP 8266 is used. The ESP8266 is a Wi-Fi SoC integrated with a Tensilica Xtensa LX106 core, widely used in IoT applications.It is a self-contained SOC and can be used with any microcontroller to access Wi-Fi network. It consists of 32 bit low powered CPU, and follows 802.11 b/g/n Wi-Fi standard.

BLYNK APP:-

Blynk is a Platform with iOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where a graphic interface is built by simply dragging and dropping widgets.

III.CONCLUSION

Although this research is still in an early stage of development, it has already proven to succeed in several of its goals. The operating system of smart phone is android which can develop effective remote control program. It has proven to allow for meaningful two-way communication between the Android phone and the robot which would allow a non-expert to interact with and adjust the functionality of a system which uses ATmega16 controller, a single board micro-controller intended to make the application of interactive objects or environments more accessible

REFRENCE

[1]   Ritikapahuja, Narendra kumar, "*Android phone controlled blue tooth robot using 8051 microcontroller*",IJSER,*Vol. 2,Issue-7,pp 14-17,July 2014*

[2]   Arpit Sharma, Reeteshverma, SaurabhGupta,Sukhdeepkaurbhatia,"*Android phone controlled robot using Bluetooth*", IJEEE,*Vol.7,pp-443-448, Nov-2014*

[3]   M. Selvam, "*Smart phone based robotic control for surveillanceapplication* ",IJRET,*Vol.3, Issue-3, pp-229-232, Mar-2014.*

[4]   Sebastian van Delden and Andrew Whigham,"*A Bluetooth-based Architecture for Android Communication with an Articulated Robot", IEEE, 978-1-4673-1382, pp-104-108, Jul 2012*

[5]   Xiao Lu, Wenjun Liu, Haixia Wang, Qia Sun, "*Robot Control Design Based On Smartphone", IEEE, 978-1-4673-1382, pp-2820-2823, Jun 2013*