

INTELLIGENT TRAFFIC CONTROL SYSTEM

Introduction:

{ An Intelligent Traffic System (ITS) involves a much closer interaction between all of its components: drivers, pedestrians, public transportation and traffic management systems. Adaptive signal systems, driver advisory and route planning and automated vehicles are some of the goals set up to increase the efficiency of actual systems. Time is very crucial thing for all the people and they don't like wasting time in traffic signal in this fast running life. The number of accidents increases with the increased speed of life. We can save time and life if we have an intelligent traffic system. Here is the importance of this proposed traffic control system. }

The traffic signal lights are controlled by single board computers with the reference of vehicle density on the road.

Abstract:

In the proposed Intelligent traffic control system , the traffic signal lights are controlled by single board computers with the reference of vehicle density on the road. If the vehicle density is high then the interval of green signal will be faster than the default time interval. The four side single board computers will check the density and that information will send to the server that controls the traffic signals. So four side single board computers will be connected in a wireless network. The wireless network obtained with Zigbee wireless protocol.

With this technique the passengers can save time at the traffic signals.

Requirements:

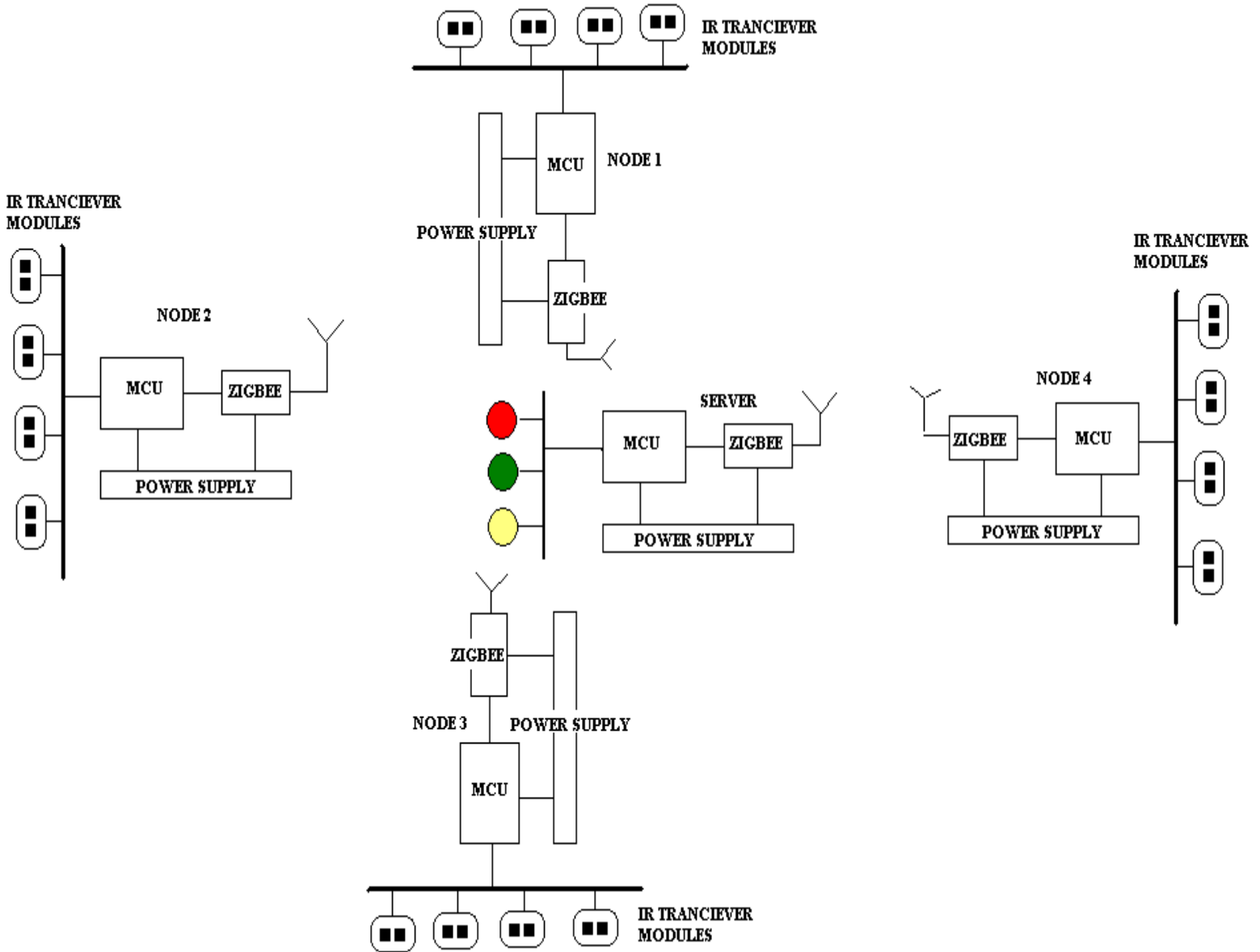
Hardware requirements

1. Controller – 8051
2. IR transceiver module
3. LEDs
4. Power supply modules
5. Zigbee modules
6. LCD

Software requirements.

1. Keil microvision 3
2. Phillips Flash magic
3. Express PCB

Block diagram:



Working principle

Normally the traffic signals will ON and OFF in an equal interval of time. But when the vehicle density increases on the road the interval of green signal and red will change. On the road there will be fixed with IR transceiver module and it will be placed some distance apart from the traffic junction. So when ever the vehicle density increases, some vehicles may stopped on the IR transceivers fixed on the road. The IR will detect the vehicle and check for certain time interval , if the vehicle is still on the same place after a certain time then the system will take it as vehicle density. According to the time interval of reflection of IR , the system will

calculate the percentage of vehicle density and that information will be sending to the server over radio communication. The server will collect all information from all the side single board computers and calculate which side road should show green signal and how much time green signal should be there.

Micro controller-AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry- standard 80C51 instruction set and pinout.

Features:

8K Bytes of In-System Programmable (ISP) Flash Memory

Endurance: 1000 Write/Erase Cycles

4.0V to 5.5V Operating Range

256 x 8-bit Internal RAM

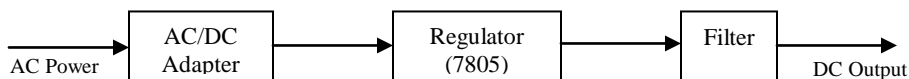
32 Programmable I/O Lines

Full Duplex UART Serial Channel

Fully Static Operation: 0 Hz to 33 MHz

Power supply:

The microcontroller and other devices get power supply from AC to Dc adapter through voltage regulator. The adapter output voltage will be 12V DC non regulated. The 7805 voltage regulators are used to convert 12 V to 5VDC.



The adapter output voltage will be 12V DC non regulated. The 7805/7812 voltage regulators are used to convert 12 V to 5V/12V DC.

WHAT IS ZIG BEE ?

Zigbee wireless network technology is a new standard launched and made by ZigBee Alliance. The alliance, founded in August 2001, is a fast-growing and non-profit organization, and it aims is to provide consumers with more flexible and easier electronic products. The second half of 2002, four large corporations including the British company Invensys, Mitsubishi Electric Corporation, Motorola and the Dutch giant Philips Semiconductor Corporation jointed together to announce that they would join the "ZigBee Alliance" to invent the next-generation wireless communication standards

named "ZigBee", which became a significant milestone in the development process. In October 2004, the ZigBee Alliance announced a version 1.0 of ZigBee protocol, and in December 2005 version 1.1. This protocol is developed based on IEEE 802.15.4

Zigbee uses free frequency bands of 2.4 GHz and 900 MHz, and its transmission rate is 20 kbps to 250 kbps. In this project we are using standard Zigbee wireless network modules. The Zigbee module and protocol have been successfully applied to power system, medical and some other fields.

WHY ZIG BEE?

Zigbee is a worldwide open standard for wireless radio networks in the monitoring and control fields. The standard was developed by the ZigBee Alliance (an association of international companies) to meet the following principal needs:

- low cost
- ultra-low power consumption
- use of unlicensed radio bands
- cheap and easy installation
- flexible and extendable networks
- integrated intelligence for network set-up and message routing

Some of the above requirements are related - for example, the need for extremely low power consumption is motivated by the use of battery-powered nodes which can be installed cheaply and easily, without any power cabling, in difficult locations.

In this project we are monitoring the temperature of High Power line conductors (Above 210 Kv). Since it is a high power transmission cable there will be a magnetic field around the conductor. This magnetic field will affect the data transmission and there is a chance to lose or corrupt the data if we use any other protocol other than ZIG BEE.

So ZIG BEE is the suitable technology for this kind of application.