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Fire Alarm Detection System

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Abstract — The key point of this task is to build up an installed framework to outline a remote THE Fire observing framework which empowers to screen the climate parameter in any THE by utilizing GSM innovation and presentation the parameter on the PC's screen. The framework contains two sections. One is transmitter hub and another one is collector part. The transmitter part comprises of whether cameras, ucontroller and GSM and the recipient part comprise of a PC interfaced with GSM through PC serial port. Here we screen temperature and dampness with the assistance of particular cameras. The data from the cameras are gathered by the small scale controller and transmitted to the collector area through wireless medium. Every one of the parameters are seen by the pc using program in the collector side. In this task we are utilizing a microcontroller 8051, imad GSM module. Three elements make the premise out of a fire: the fire source, ecological components and ignitable material. A fire generally happens as the consequence of their joined impacts (Song et al., 2006). As indicated by the Canada Fire Weather Index Forecast Model, the dampness substance of the flammable material assumes an essential part in fire, which implies the likelihood of flames relies on upon the dampness content (Tian et al., 2006). Along these lines, the dampness substance of burnable materials is a noteworthy purpose of appraisal and predicts whether a fire.

Keywords- GSM, microcontroller, embedded system, cameras, transmitter.

I. INTRODUCTION

These fires are among the most serious disasters to the resources and the human environment. When there is no fire accident the GSM fire cameras placed in the compartments will send no signal so the micro controller will not work. Thus, once the fire is detected, the GSM fire cameras placed in compartments sends a signal and the GPS, GSM, Buzzer, LCD modem which are kept ON all the time will respond. The fundamental aim of this project is to develop an embedded system to design a wireless The Fire monitoring system which enables to monitor the weather parameter in any The by using GSM technology and display the parameter on the PC's screen. The system contains two parts. One is transmitter node and another one is receiver part. The transmitter part consists of whether cameras, ucontroller and GSM and the receiver part consist of a PC interfaced with GSM through PC serial port. Here we monitor temperature and humidity with the help of respective cameras. The data from the cameras are collected by the micro controller and transmitted to the receiver section through wireless medium. All the parameters are viewed by the pc using program in the receiver side.

Once there is a fire accident, immediately the fire camera will immediately sense the change in temperature and thus the micro controller is supplied with power supply. When there is no fire accident the GSM fire cameras placed in the compartments will send no signal so the micro controller will not work. Thus, once the fire is detected, the GSM fire cameras placed in compartments sends a signal and the GPS, GSM, Buzzer, LCD modem which are kept ON all the time will respond.

II. LITERATURE REVIEW

1), the fire prevention methods largely consist of patrols, observation from watch

AUTHORS: Lai, 2004; Huang et al., 2005

Although observation from watch towers is easy and feasible, it has several defects. In the first place, this method requires many financial and material resources and a trained labor force. Second, many problems with fire protection personnel abound, such as carelessness, absence from the post, inability for real-time monitoring and the limited area coverage. The scope of application of satellite detection systems is also restricted by a number of factors, which reduces its effectiveness in the fire detection. example, a satellite monitoring system has a long scanning cycle and the resolution of its saturated pixel dots of images is low.

2) A Programmable Sensor Conditioning Interface for Low-Power Applications

AUTHORS: A. Bayo N. Medrano, B. Calvo, S. Celma

Cost reduction in wireless sensor networks becomes a requirement to extend their application in fields where a great amount of sensors is needed. In those cases, the use of smart sensors is expensive, requiring applying low-cost analogue sensors. This paper presents an interface for analogue sensors designed to adapt their output, optimizing the sensor span. The proposed interface includes both electronic and software elements, and components that let self-calibration to compensate undesired effects in the electronics.

3. Fire Detection and Notification System in Trains.

AUTHORS:Kuncham Viswa Teja¹, Suresh Angadi²

In this paper, a remedy to reduce the death loss occurring due to fire accidents in trains is presented. Fire on a running train is more catastrophic than on a stationary one, since fanning by winds helps spread the fire to other coaches. When these accidents are occurring in remote areas or during night times the loss or damage being caused is at higher rates. The damage is heavier due to improper reach of service at right time due to improper communication. This time delay is causing heavier damage. Thus, eliminating the time between when an accident occurs and when first responders are dispatched to the scene decreases the damage. This projects help in notifying the passengers and emergency services. The project consists of a microcontroller which is interfaced with the GPS module, GSM modem and fire cameras. Once the cameras attached in the compartments of train senses the smoke detection, it assumes a fire accident. The controller assumes it as an emergency and starts the buzzer, LCD display and GSM modem in the engine sending the latitude and longitude information to the specified mobile number and emergency services, by fetching the information of GPS.

4. Wireless Camera Network Based Monitoring System for The

AUTHORS: SNEHAL A.JADHAV, SHWETA M.INGAWALE, DHANASHREE G.MOHITE.

Wildlife prevention has become an important practice due to negative effects of human activities such as cutting of trees on large scale and unregulated hunting which causes major threat to wildlife. So we are going to introduce the project on prevention of trees and wildlife in the. This article presents the design of a system for detection of vibration for prevention of cutting of trees, detection of temperature for prevention of the fires also detection of pulses of animal for prevention wildlife using wireless camera networks to prevent a disaster (the) that could lead to loss of a significant number of natural resources. In this project, The sensing device can sense the vibration, pulse, and temperature, and then sent them over zig-bee networks to the office. To save the transmission cost, we also sent the GPS location information simultaneously. Here we use Wireless Camera Networks (WSNs).In this network numerous cameras are usually deployed on remote places, the deployment and maintenance must be easy and scalable. Wireless camera network is the network which consists of large number of small nodes. Camera nodes are great for deployment in hostile environments or over large geographical areas.

III. SURVEY OF PROPOSED SYSTEM

In this paper, we proposed fire detection system in this The camera will conteneously san the image and provied it to PC in which we are applying MATLAB for image processing. When thre is fire detect the scanned image of camera will be send to the PC wchich after providee signal to the Microcontroller. The 8051 provide a signal to buzzer and symontanusly SMS will be send to the athorized person through GSM.

IV. MODULES

INPUT MODULE:

4.1 Camera:

Digital and film cameras share an optical system, typically using a lens with a variable diaphragm to focus light onto an image pickup device. The diaphragm and shutter admit the correct amount of light to the imager, just as with film but the image pickup device is electronic rather than chemical. However, unlike film cameras, digital cameras can display images on a screen immediately after being recorded, and store and delete images from memory. Many digital cameras can also record moving videos with sound.

4.2 MICROCONTROLLERS:

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. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.

As the fire detected the Microcontroller will simultaneously on the buzzer and send a message through GSM.

4.2 OUTPUT MODULE:

GSM Modem

This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232. Supports features like Voice, Data/Fax, SMS,GPRS and integrated TCP/IP stack.

Features

- Quad Band GSM/GPRS 850/900/1800/1900 Mhz
- GPRS multi-slot class 10/8
- GPRS Mobile station class B
- Compliant to GSM Phase 2/2+
- Class 4 (2W@850/900Mhz)
- Class 1(1W@1800/1900Mhz)
- Control via AT commands(GSM 07.07,07.05 and enhanced AT commands)
- Operation Temperature(-20 deg C to +55 deg C)

4.3 MATHEMATICAL MODAL

The system s is defined as

$S=\{I,P,O\}$

I= input as a image

P= process

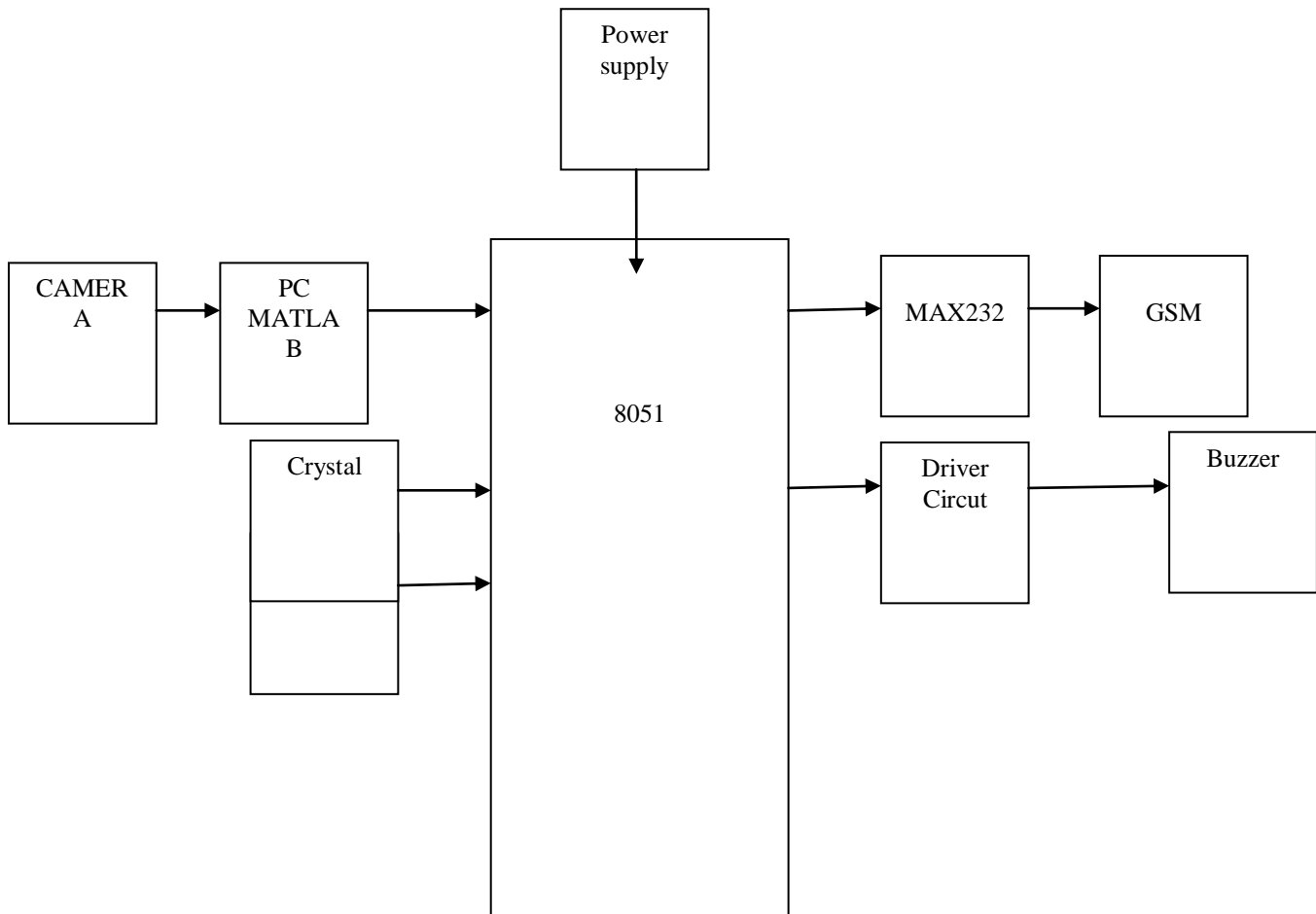
O= OUTPUT AS MESSAGE AND BUZZER.

$P=\{IP,MC\}$

IP= image processing

MC= microcontroller

V. SYSTEM ARCHITECTURE



CONCLUSION AND FUTURE WORK

The development board of Atmega 16 was fabricated, including bridge rectifier based Power Supply. Interfacing of Atmega 16 and GSM Module was successfully achieved. The pin connection involved has been mentioned in the report itself. Communication between GSM modules using Hyper Terminal was achieved.

REFERENCES

- [1] Muhammad Ali Mazidi, Janice G. Mazidi, Rolin D. McKinlay, *The 8051 Microcontroller and Embedded Systems Using Assembly and C*, 2nd ed.
- [2] The IEEE website. [Online]. Available: <http://www.ieee.org/>
- [3] GSM. [Online]. Available: <http://www.gsma.com/home/>
- [4] ZigBee Alliance Official Site, [online]. Available: www.zigbee.org.
- [5] Rajesh, N.N.Ramesh and S.M.Prakhya 2010. Wireless vehicular accident detection and notification system. International conference on mechanical and electrical technology.
- [6] M.Rajendra Prasad, P.Aswani Kumari, "An Automated Traffic Accident Detection and Alarm Device", published in IJTEL.