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REAL-TIME FLASH-FLOOD MONITORING NAD ALERTING AND FORECASTING SYSTEMUSING DATA MINING AND WIRELESS SENSOR NETWORK

K.Ramadevi[1], Dr. K. Hemachandran [2], H.Raghupathi (HOD)[3]

[1]PursuingM.Tech (ES), [2] Professor,Assistant Professor[3]

Visvesvaraya College of Engineering and Technology, Patelguda, Ibrahimpatnam,

Rangareddy Dist.Telangana, (India)

ABSTRACT

As we can see that in most of the remote areas there is no weather forecasting system especially those who are residing the rivers. In our project we are implementing the system to avoid the large lose of lives we are implementing a system which is capable of reading the current state of the river by using the water level sensor and also at the same time our system is also capable of accessing the data from the weather forecasting systems through global system. With the help of system we can detect some earlier risks of the flood. Since we already knows the current water level of the river and at the same time we also knows weather forecast which means we know when will further rains comes and when will hot day comes. So we can estimate the river dangerous level even before and we can also have plenty of time to intimate nearby villages and evacuation if required. We are using the GPRS system to acquire the data form the forecast system and we are using the RF wireless module to read the river water level. We can easily send the alert messages to nearby people with the help of GSM with in no time.

Keywords*: Arm7 Board,Gsm, Module, RF (tx,rx),water level sensor,*

I. INTRODUCTION

Everyone is aware of Damage because of flash floods. That kill greater human beings international than every other natural disaster in a mean 12 months, flash floods kill extra than 5,000 unsuspecting humans and cause hundreds of thousands of bucks of property harm. During floods in particular In flash floods the humans' asset like roads, bridges, farms, houses and motors are mage caused by flash floods. That kill greater human beings global than another natural disaster in a median 12 months, flash floods kill greater than 5,000 unsuspecting human beings and reason hundreds of lotof property harm. During floods specifically in flash floods the human'sasset like roads, bridges, farms, homes and vehicles are destroyed.So many People end up homeless. Additionally, The authorities Authorities In Japan fear that Fukushima radiation tiers are 18 instances higher than even idea.than even concept. The landslide, which hit early inside the morning at the equal time as residents have been asleep, turn out to be believed to have been and killedmore above 160 people.

II. AIM OF THE PROJECT

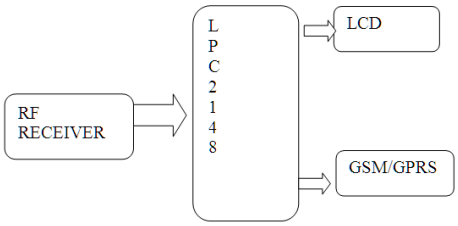
As we can see that in most of the remote areas there is no weather forecasting system especially those who are residing the rivers. In our project we are implementing the system to avoid the large lose of lives we are implementing a system which is capable of reading the current state of the river by using the water level sensor and also at the same time our system is also capable of accessing the data from the weather forecasting systems through global system. With the help of system we can detect some earlier risks of the flood. Since we already knows the current water level of the river and at the same time we also knows weather forecast which means we know when will further rains comes and when will hot day comes. So we can estimate the river dangerous level even before and we can also have plenty of time to intimate nearby villages and evacuation if required. We are using the GPRS system to acquire the data form the forecast system and we are using the RF wireless module to read the river water level. We can easily send the alert messages to nearby people with the help of GSM with in no time.

III. EXISTING SYSTEM

In this project based on the existing system by using water level detection using GSM technology we sending throw massage .

IV.PROPOSE SYSTEM

After studding literature survey we modified these papers works and trying to build a Novel technique that will give us best result like Notifications to the user that something bad might happen to their mobile phones as well as give future forecasting predictions to the users so the people move to safe places or at least they prepare before some damage happens. First Of all we acquire distinctive sensor values and ship it to the ADC for Analog to digital conversion then those virtual indicators are forwarded to microcontroller then microcontroller have task to transform this digital statistics into person define layout and ship records to server with the assist ofRS-232. Every collected values or Data Logs are store in Database, by applying the Data mining on database we can get the future prediction values. We use data mining as primarily based on making use of Bayes' theorem with strong (naive) independence assumptions. A extra descriptive time period for the underlying possibility model would be "independent feature model" In simple terms, a naive presence (or absence) of a specific characteristic of a category is (or absence) of a specific characteristic of a category is of some other feature, given the elegance variable.



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Sub section (River section):

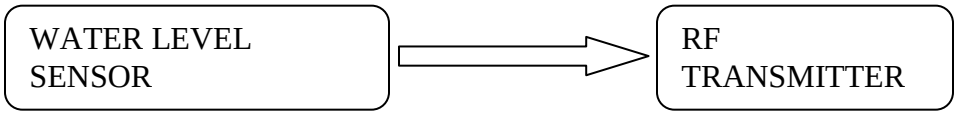


Fig1: Block diagram

VI. HARDWARE REQUPIREMENTS

LPC2148 MICROCONTROLLER:

The ARM7 (advanced RISC gadget) pressers board primarily based complete on a 16/32-bit ARM7 its method of sixteen/32-bit ARM7 TDMI-S microcontroller, 8 computer reminiscence unit to forty pc reminiscence unit of on-chip static RAM and 32 laptop memory unit to 512computer reminiscence unit on-chip flash memory; 128-bit In-gadget Programming (ISP). 32-bit timers/out of doors occasion counters, PWM pulse width modulation unit (six outputs) and watchdog, Low electricity of actual-Time Clock (RTC), a couple of serial interfaces which has 2 UARTs , fast I2C-bus (400kbit/. There are sixty 4 pins of ARM7 processer and a couple of ports (port0, port1) forty five pins are enter/output.

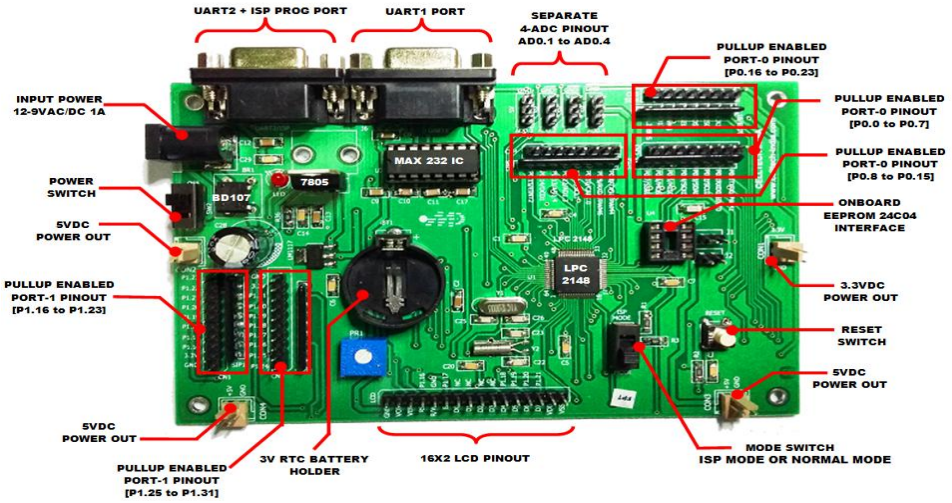


Fig2:-LPC2148 board

GSM/GPRS-Module:

GSM (global tool for mobile communications) is a cellular network, which means that that mobile telephones hook up with it through way of trying to find cells within the right away place. GSM networks characteristic in four specific frequency tiers. Maximum GSM networks feature within the 900 MHz or 1800 MHz bands. A few worldwide places in the Americas use the 850 MHz were already allotted. Different bands are assigned in some international locations, in which the ones frequencies have been formerly used for first-technology structures.

Fig 3: GSM/GPRS module

WATER LEVEL INDICATOR:

Water level indicator is used to measure the water level present in oceans, rivers it is calculated based on step by step levels if the connecting wire at each level is hitting the water it will sense and measure the reading at that level.

RF MODULE

433 MHz RF Transmitter STT-433:

Overview The STT-433 is ideal for far flung manipulate applications in which low cost and longer range is needed. The transmitter operates from a 1.Five-12V deliver, making it ideal for battery-powered programs.The transmitter employs a SAW-stabilized oscillator, making sure correct frequency manage for satisfactory range overall performance..Electricity and harmonic emissions are smooth to control, making FCC and ETSI compliance clean. The production-pleasant SIP style package deal and low-cost make the STT-433 suitable for excessive extent packages. Features · 433.Ninety two MHz Frequency · Low Cost · 1.Five-12V operation · 11mA modern consumption at 3V · Small length · 4 dBm output energy at 3V.

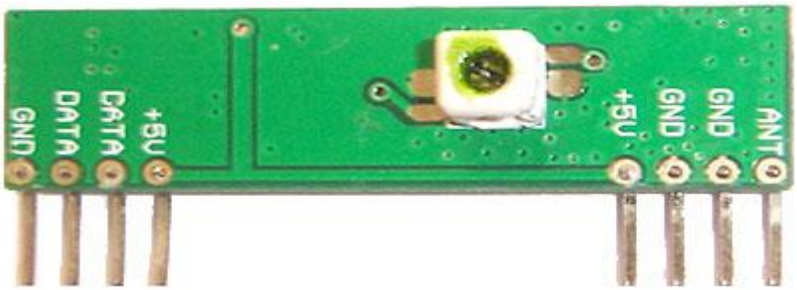
RF Transmitter

Remote Keyless Entry (RKE) · Remote Lighting Controls · On-Site Paging · Asset Tracking · Wireless Alarm and Security Systems · Long Range RFID.

433 z RF Receiver STR-433:

VII. OVERVIEW

Overview The STR-433 is right for short-variety far flung manage packages wherein value is a primary concern. The receiver module requires no external RF components besides for the antenna. It generates truly no emissions, making FCC and ETSI approvals clean. The incredible-regenerative layout well-knownshows great sensitivity at a completely low fee.Manufacturing-friendly SIP fashion bundle and occasional-fee make the STR-433 appropriate for excessive volume packages.



RF RECEIVER

VIII. SOFTWARE DESIGN

In this proposed contrivance, as we tend to used LPC2148 we wish to use following software package instrumentation to program for it.

1. Keil4 Vision
2. Flash Magic

The Keil4 Vision an IDE for Embedded c language. In this IDE, we desire to import the utilities and libraries consistent with the controller. This IDE may be very more without difficulty and in consumer pleasant thanks to apply, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying getting into conjunction with Hex file generation. The flash magic is a programming software. The C/C++ software written in IDE could be processed into Hex record i.E. In .Hex layout. By the use of hex report we have a tendency to products the code into microcontroller and carry out utility.

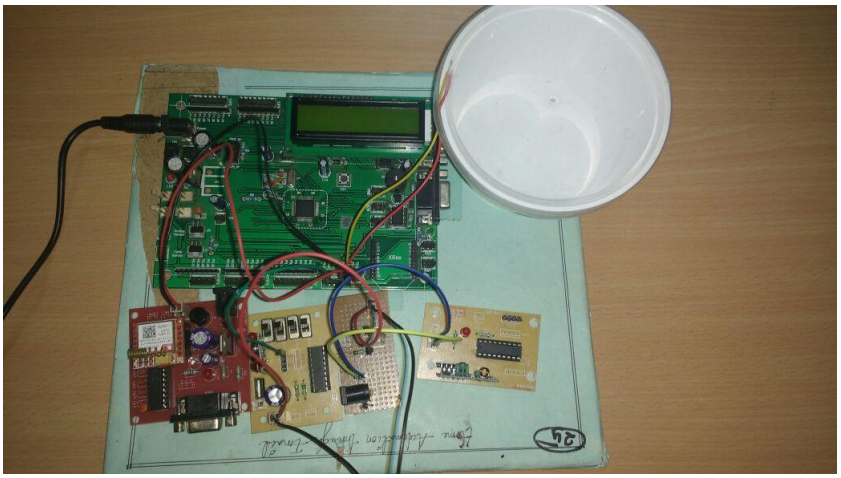
IX. WORKING PROCEDURE

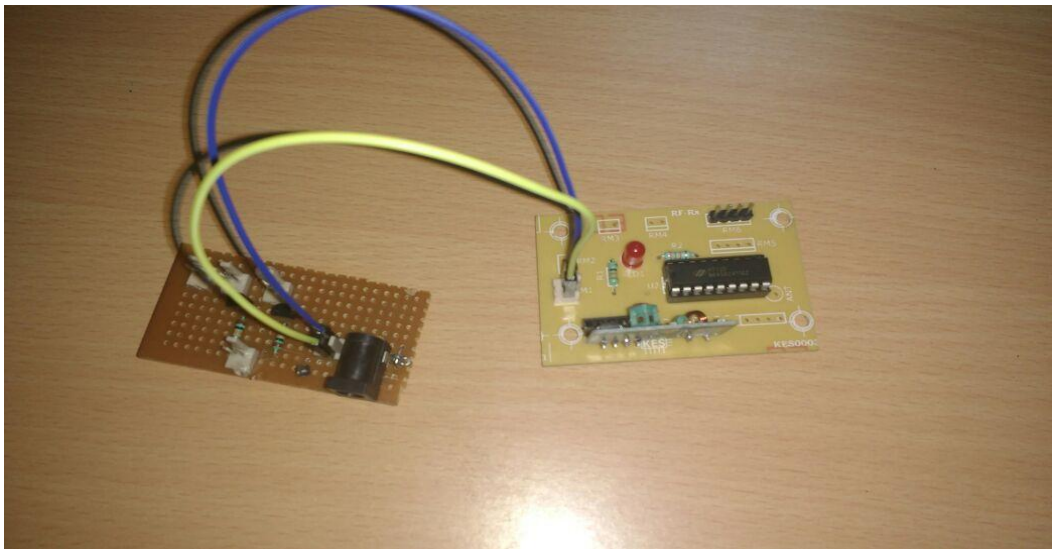
In this project we are connecting microcontroller to water level sensor and gsm and rfcommunication Receiver and transmitter. By using rf communication we have to pass the signal as per user requirments.In rf communication one rf transmitter and one rf receiver is present as per this communication in these 4 switches are present one switch is pressed in transmitter side corresponding switch in receiver side accept the transmitter signal based on that

receiver side switch activated.in this we are controlled as per these switches in the range of 40m distances we used rf comminication.In this project rf transmitter is connected to water level sensor it continuously monitor the water level present in oceans ,rivers if water level is high as per our targetting level rf transmitter transmits the alert to mictrocontroller microcontroller side receiver is receive the that transmitted signal as per this we are calculating the waterlevel and ignoring the damages due to floods.

X. RESULT

The complete prototype as developed was tested on different voltages and different areas. It provided the accurate result at voltage of 230v to440v.we have tested circuit in "**Flood alert system by using weather forecasting data and wireless sensor network",** Total power consumed by store before installation of device is 22KW in month. But after installation of automatic light control system it reduced to 18.26 KW (power consumption).





XI. CONCLUSION

We are trying to build a Novel technique that will give us best result to get better understanding of the Environmental conditions and to alert in and before hazardous conditions to the authorities and uses. That include not only monitoring and alerting to the authorities & uses but also it provides future predictions for the future disasters to the user. Our system not only just monitors hazardous conditions and Alert hazardous conditions but also it forecast hazardous conditions and allow the users to interact with the system via mobile portable devices like android phones and non- android phones via SMS (Short Message Service). Hence we come to conclusion that Real-Time Flash-Flood Monitoring, Alerting and Forecasting System is more advanced technique that can provide us best features

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KANDARABOEINA RAMADEVI pursuing M.Tech (ES) from visvesvaraya college of engineering and technology, Patelguda, Ibrahimpatnam, Ranga Reddy dist, Telangana,INDIA.

Dr.K. HEMACHANDRAN working as professor, from visvesvaraya college of engineering and technology, patelguda, Ibrahimpatnam, Rangareddy dist, Telangana,INDIA.

H.RAGHUPATHI(HOD) , working as Assistant Professor from Visvesvaraya College Of Engineering And Technology, Patelguda, Ibrahimpatnam, RangaReddy dist, Telangana, INDIA.