NATURAL DISASTER MONITORING ALERT USING IOT

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Abstract : Natural disaster event occasions are Floods, land sliding, seismic tremor are basic signs that very impact the improvement of human culture, as they are the most extensive fiascos on earth and they cause the best property and human incident. In this System we are shown the building of caution structure for disasters the officials we are uses the remote sensor compose for distinguishing enveloping cataclysm. In the paper portrayed calamity checking by investigating the sensors information. The propose framework utilizes raspberry pi to interface the at least two sensors. Raspberry pi gives the controller for sensors then process the sensor's information and send alert message likewise readings of sensors information after investigation of calamity. the police and medical clinics stall out into debacle to spare the users life.

IndexTerms - **smartphone, disaster alert, remote sensing, GPS, PS.**

I. INTRODUCTION

Occurrences of natural disasters are perpetually increasing worldwide thanks to warming and environmental destructions. Matters are far a lot of severe in developing countries as refined disaster detection technologies area unit either unaffordable or impractical. Researchers are making an attempt to deal with this international Challenge mistreatment wireless sensing element network (WSN) technology for over one decade. Disasters will be closely monitored by augmenting a range of sensors, e.g., temperature, displacement, pressure, noises, and concentration of chemicals. In our system we define the minimum delays values of sensors if sensors getting large values than defined values of sensors then it will consider disasters occurred. The sensors values reading from files Natural disasters like Land slippery , Forest Fires, Tornado and earthquakes area unit the good threats towards the group that cannot be prevented however careful coming up with of the emergency measures by 'alert' system will typically scale back unfortunate consequences. Recent technological advances in communication created new trends within the disaster observance system. The system focuses on observance water level, earth vibrations via sensors, and generates alert signal once water level or level of earth vibrations crosses a threshold. Alert message is Text Message and motorized man app notification Service to the involved authorities through their mobile phones. It additionally includes Public address (PA) system to broadcast the messages to the native folks, close the Forest facet. The module also can send standing of water elevation to anyone World Health Organization has the motorized man App. This module would be useful to the community and act as a preventative action to save lots of lives within the case of Land sliding, Forest Fires, Tornado or earthquake disaster

II. LITERATURE SURVEY

A. Integrating cloud-WSN to analyze weather data and notify SaaS user alerts during weather disasters:- Thispresents associatedegree increased design for integration cloud with wireless device networks to research weather information and send word SaaS users alert throughout weather disasters at low value. The incidence of natural disasters affects lives, damages property and changes our lives utterly. Existing system doesn't support node and network level virtualization for weather sensors. The projected system overcomes the higher than limitation by preparation of WSN infrastructure for multiple weather applications mistreatment virtual device and overlay idea. Watching weather information and providing SaaS and social network disaster alerts supported call ID3 technique and supply cloud authentication mistreatment secure shell. These factors improve and supply prime quality disaster alters to users and weather analysts at low cost.[4]

B. Internet of Things (IoT) for Effective Disaster :-India's historic vulnerability can't be exaggerated. Whereas it's going to are quoted endlessly, it's vital to capture this reality even though it's to line the preamble to the present whitepaper.
• fifty seven land is at risk of earthquakes. Of these, 12-tone system is at risk of severe earthquakes.
• sixty eight land is at risk of drought.
•12% land is at risk of floods.
• V-day land is at risk of cyclones.
Many cities in Asian country are at risk of chemical, industrial and synthetic disasters. The policy manufacturers and company in Asian country have cast compelling thought-leadership within the space of emergency & disaster management.
The observe revolves round the four pillars as mentioned below:
• Readiness
•Response
•Recovery and Mitigation Over a amount of your time, we have a tendency to appear to own finalized the general framework for addressing emergency and disaster management in Asian country[12]

C. Disaster Alert And Notification System Via Android Mobile Phone By Using Google Map:-System comprises of an outsider server named Disaster Management Server (DMS), android gadget on that our application put in and client. Updates of the debacle (tidal wave, twister or flood) zone unit put on DMS by the local climate working environment. to ask programmed warning of anticipated debacle gadget client enrolls on Disaster Management Server (DMS) else client will gets manual notice. The client keep bit with DMS to ask most recharge data acquired by GSM. The arranged application informs the client put in feasible calamity zone with visual and sound debacle cautioning and departure rule blend with closest area of asylum or safe zone on the guide of the apparatus. DMS furthermore followed Evacuation advancement and national recognizable proof of client. The test result demonstrates the adequacy of our system[7]

D. Natural Disasters Alert System Using Wireless Sensor Network:- Wireless Sensor networks provide distributed network and access to sensors, controls, and processors intensely embedded in alleviate, equipment, and surrounding. The sensor network provided new applications in area such as environment, industrial purpose and health care, for monitoring and control for determination of safety and security. Wireless sensor networks (WSN) is the technology used to provide effective solution natural disaster management. The current systems for TWS are bulky, very costly and difficult to maintain. An Embedded controlled wireless sensor network is used for monitoring the impact of earthquake and tsunami damage. The sensor nodes are custom-developed float sensors and acceleration sensors and a low power readout ASIC circuit for a long life. The accelerometers are used to measure the seismic response of the an earthquake. They detect vibrations during an earthquake event and send data to remote base station where multiple sensors data across the town is collected. A RF module provides low power network architecture is implemented over an 802.15.4. [5]

E. Real Earthquake Early Warning System:-Quake early cautioning framework is shown for with the estimation of information and yield voltage esteems, by changing over the vibration to the electrical flag utilizing Vibration Sensor, Suitable cautioning are Produced .By utilizing GPS and GSM framework proficiency For data Delivery if there should be an occurrence of calamities expanded and Exact area can be found.[6]

III. PROPOSE METHODOLOGY

In the system, we are developing the system for disaster management. the user install an android application in mobile then the user register itself after that user receives OTP message for verifying the details of user and user login to the system. In the propose system uses three raspberry pi sensors for monitoring levels of water, earth vibration, fire level and generates an alert signal when water level or level of earth vibrations crosses a threshold values. When the sensor receives positive signals. The system calculates the distance from disaster location to the user location. If user distance finds within disaster location then the system will generate one pop up window " Are you fine", then if the user has click on no or not clicked a particular time. then the system capture photo and the current lotion of the user and send it to the nearest hospitals and police station. In this propose system uses two algorithms for calculating distance and finding nearest neighbors from disaster to user.

3.1 Architecture

In Our system we are only detecting the disasters and notify the users as alert. The system architecture uses flame sensor ,vibration sensor and moisture sensor are attached into raspberry pi. Each sensor has sensor information that data process by the Raspberry pi. Raspberry pi have own processor to process the one of the connected sensor data and accordingly send alert message regarding disaster. In our system we define the different threshold values in sensor information file. The sensor information file read by the Raspberry pi that is if flame sensor getting 1 value ,vibration sensors getting 25 above threshold values and moisture sensor getting 85 above threshold value then system considers the disaster occurred and system forwards message to users who are distance within 10km region from natural disaster location and also sends message to nearest police and hospitality within delay time 5sec. here system calculate the distance by using haversine algorithm. System also finds user neighbors location by knn algorithm. In web application Police and hospitals are register and login to get user location to save the users life and hospitals are get users location information to treatments the users. The below architecture shows the user will get a notification about the disaster and user will give the response to system.

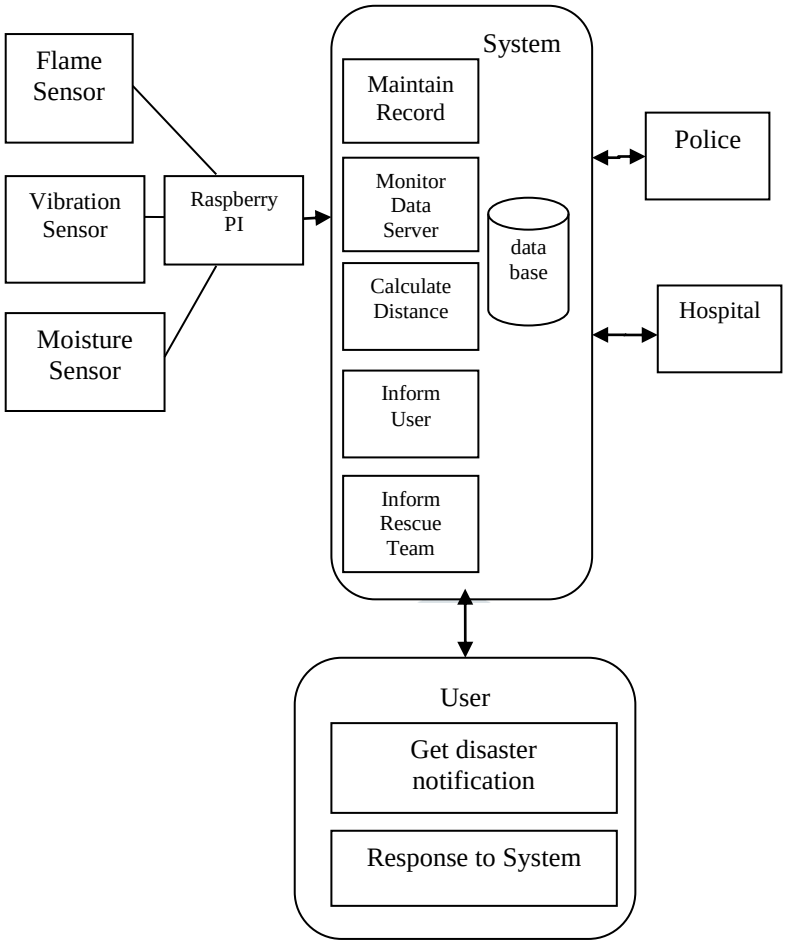

Fig 1. System Architecture

3.2 Algorithm

The Propose system uses following Algorithms:

3.2.1 KNN Algorithm

In propose system KNN Algorithm used for find out the K-nearest neighbors.The k-nearest neighbors algorithmic rule (k-NN) may be a non-parametric methodology used for classification and regression. In each cases, the input consists of the k nighest coaching examples within the feature area. The output depends on whether or not k-NN is employed for classification or regression:
In k-NN classification, the output may be a category membership. AN object is classed by aplurality vote of its neighbors, with the article being assigned to the category commonest among its k nearest neighbors (k may be a positive whole number, generally small). If k = 1, then the article is just assigned to the category of that single nearest neighbor. In k-NN regression, the output is that the property value for the article. This value is that the average of the values of its k nearest neighbors.

3.2.2 Haversine Algorithm

The haversine formula is used to find an distance in navigation, giving circle distances between two points on a sphere from their longitudes and latitudes. By using the haversine formula. Central point can be calculated between two points with **r** as radius of earth, **d** as the distance between two points, ϕ_1, ϕ_2 is **latitude** of two points and λ_1, λ_2 is **longitude** of two points respectively, as:

Haversine algorithm to calculate the distance from target point to origin point

1) R is the radius of earth in meters.
2) Lat_O= latitude of origin point, $Long_O$ = longitude of origin point
3) Lat_T= latitude of target point, $Long_T$= longitude of target point
4) Difference in latitude = Lat_O-Lat_T
5) Difference in longitude = $Long_O$-$Long_T$
6) Φ =Difference in latitude in radians
7) Λ =Difference in longitude in radians
8) O= Lat_O in radians.
9) T= Lat_T in radians.

10) A= sin(Φ/2) * sin(Φ/2) + cos(O) *cos(T)*sin(Λ/2)*sin(Λ/2)
11) B= min(1,sqrt(A))
12) Distance = 2*R*B

IV. RESULTS AND DISCUSSION

The system is aims not to describe the functionality of every Disaster Management system available, but to investigate the way Human-Computer Interaction takes place in such systems. The propose system are develop using android and web application. Android application is for the end users and web application for the Police and hospitals. The System will generates the Alert message and sends it to the users which are nearer locations to the earthquake. And also if the earthquake is happened then the system informs to the rescue team of Police & Hospital. Some other future potentials are The advancement in the field of science and technology helped to provide various tools and instrument supported by statistical data to properly solve environmental problems and help in its management.

IV. CONCLUSION

We have accomplish that we have implement some disaster and emergency management comes that use wireless sensor networks in their architectures to live and communicate helpful information. The role of a sensors is to sense the surroundings, communicate and exchange sensor information with alternative nodes within the space, locally Process its own information and create good choices concerning what it observes. The planned system has contained the sensor technology for detecting the natural disaster and propose system used the KNN and Haversine rule for locating out the location an secures the location info. Plan System should advise the users a couple of natural disaster like water flooding, earthquake and provides service to the user.

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