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A Smart Way of Revelating Flash Floods Early Warning and Extrication System

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Abstract*: The main aim of the project is to avoid the various problems in the existing system of flood monitoring. In the present existing system, the experts have to analyze the condition and give the information to authorities and also a web based service is there. With the help of calibration experts analyze the condition and water level. The drawbacks of this project are as follows. Fast alerting, smart protection smart rescue system is not present. To overcome these drawbacks. A smart way of revelating flash flood early warning and extrication system "Smart alerting system is used to alert the people in floods prone areas as well as the authorities at the same time to reduce the problem of slow alerting which may lead to lose of many lives. This can be done by using buzzer. This water level sensing is done near the dams and alerting is given at the platform. Whenever the water level reaches level -1 people and authorities are alerted by buzzer sound once. Whenever the water level reaches level-2 people and authorities are alerted by buzzer sound twice. Whenever the water level reaches level-3 people and authorities are alerted by buzzer sound ten times. So that people has to vacate the flood prone areas. Smart platform is used to protect the people and assemble the people in same place. So that they can get facilitated with all basic needs which makes the recue team easier it consists of smart platform to protect the people which moves in accordance with flood water whenever the water touches platform the platform moves up. Whenever flood water is decreased then with the help of button which is placed in the platform. Platform moves down. Smart rescue system is used to rescue the people who are unable to move from the houses. It consists of button to detect the human presence as well as PIR sensor to detect the human presence who are unable to move (physically challenged people) with this white LED blinks. Whenever the water level reaches the low level then blue LED blinks. Whenever the water level reaches the high level then red LED blinks. These LEDs indicates the emergency of the people which helps the rescue team to rescue the people in high emergency. Red LED indicates they are in high risk. blue LED indicates they are in low risk.

***Keywords*: flash floods**

1. Introduction

The main motivation of the project is to reduce the loss of many life's due to flash floods. due to various problems in the existing system of flood monitoring. In the present existing system, the experts have to analyze the condition and give the information to authorities and also a web based service is there. With the help of calibration experts analyze the condition and water level. The drawbacks of this project are as follows. Lack of Fast alerting due to delay as well as late process of data transmission, lack of smart protection, lack of smart rescue system is not present.

2. Module description block diagram and flow chart

The project consists of three modules they are:

- Smart flood monitoring system
- Smart platform
- Smart rescue system

A. Smart flood monitoring system

The water stored in the dams will increase gradually due to heavy rains and these rain water will leads to flash folds. To avoid the loss of human life's this system will play a major role in future. This system consists early warning of floods will be given. whenever the water in dam will increases than the normal range alert will be given. Whenever the water level reaches level-1 it will give one-time alert near flood prone areas. Similarly, second alert and third alert are also be given two times and ten times respectively. The alerting system consists of Node MCU, electrodes. One electrode is grounded which is placed in the base of the dam and another electrode will be placed at level-1, level-2 and finally at level-3. whenever water reaches level-1 and touches the electrode, then the circuit is closed and an alert will be given at the plat from. Similarly, second and third alert will be given two times and ten times buzzer sound respectively. If the third alert has been given, then the maximum chance of occurrence of floods will be three so people in the flood prone area have to vacate their place and reach the safe place.

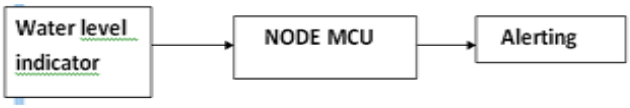

Fig. 1. Block diagram of smart flood monitoring system

The inputs from water level are given to Node MCU and output is alert at the platform

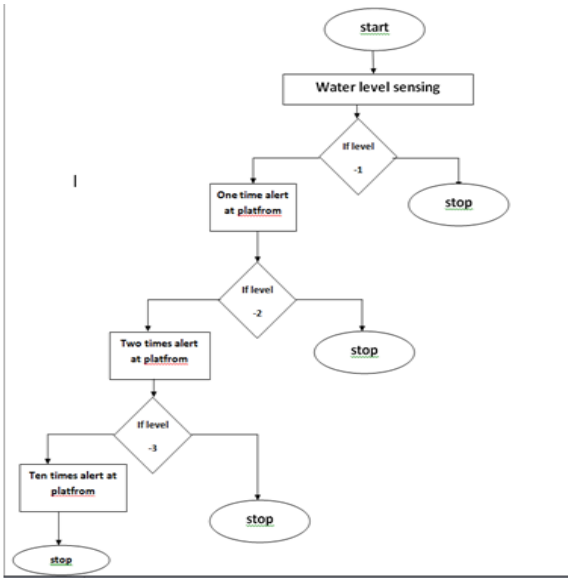

Fig. 2. Flowchart of smart flood monitoring system

B. *Smart platform*

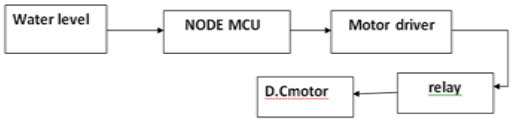

Fig. 3. Block diagram of smart platform

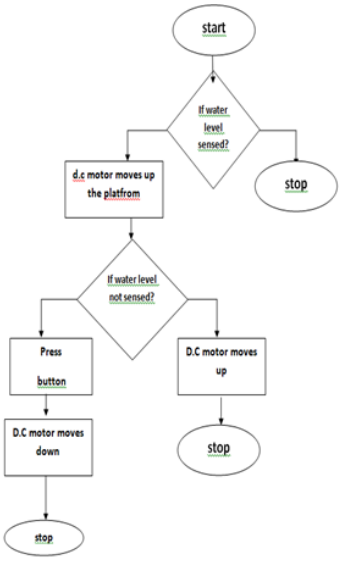

Fig. 4. Low chart of smart platform

After all alert has been given. finally, In the third stage most of the people may vacate their places to safe places and some of them may be strucked in the village. The alert sound will indicate the platform place for the people. The platform moves upwards based on the water level; of plods. The smart platform CKT mainly consists of Node MCU(esp8266), D.C motor, sieron, relay, motor driver, the seiran is used to alert the people. One Electrode is grounded and other one is connected to the base of the moving platform moves upwards with the help of an D.C motor. The D.C motor works with the help of motor driver it will converts the low voltage to high voltage to drive motor. When water is drained off to down the platform there is switch in the platform by using that we can move the platform down.

C. *Smart rescue system*

After the occurrences of floods some people that are unable to come out of their houses and some are strucked in the houses. For these people smart rescue system is placed in their houses for detecting and rescuing them. Whenever the person in the house trigger the button then a white L.E.D is placed which indicates the human presence in the house. This can be done even with the help of P.I.R sensor to the who are unable to move. Then the water level sensing is done with the help of electrodes. one is grounded and remaining are placed at the level -1(low), level-2(high). Whenever the water level reaches the level-1 the blue LED blinks which indicates the low level emergency to the people. Whenever the water level reaches the level-2 the red LED blinks which indicates the high level emergency to the people. Then the rescue team have rescue the people with the high emergency level first then the low level.

Fig. 5. Block diagram of smart rescue system

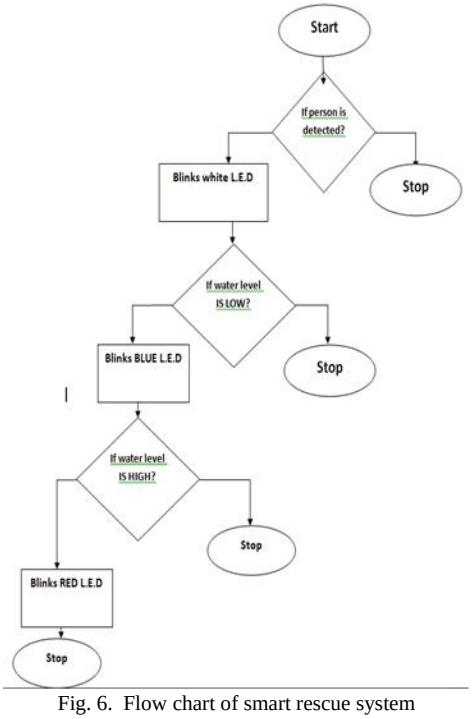

Fig. 6. Flow chart of smart rescue system

3. Conclusion

In present days thousands of people are losing their lives during floods due to lack of fast alerting, lack of smart protections, lack of smart rescue. So, by using a smart way of revelating flash floods early warning and extrication system the above mentioned problems can be avoided which are present in the existing system. By using smart alerting system, the problem of fast alerting can be avoided. By using smart platform, the problem of smart protection can be avoided by using smart rescue system, the problem of smart rescue can be avoided. If such system is implemented, then thousands of people can save their life's.

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