REAL TIME IMPLEMENTATION OF AN ADVANCED CHILD RESCUE SYSTEM BASED ON GSM

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Abstract: Present survey shows, India has approximately twenty seven million bore wells, but in several of them have been abandoned because they no longer supply water. When a bore well dries up and is not any longer in use, its cover usually made from forged iron is removed and therefore the PVC pipe pulled out, leaving a naked hole. The iron cast and pipe are removed to show that the well is no longer useful. Children involuntarily fall under the bore well which yielded water and left revealed. The process of saving the trapped child into bore well is comparatively challenging. The rescue operation for saving the child almost ended with failure. The probability of saving the child is very less in existing method. Hence to overcome this problem, here i am proposing an advanced child rescue system using GSM. This project implies a new design which tracks the working status of bore well, opening and closing status of bore well covering door and it also track the closure which is kept at 5 feet in depth which prevents the children from falling into it when a bore well dries up and is no longer in use. The system tracks all these parameters and alerts by passing certain notes as messages to the rescue team and respective department along location. The Proposed work does not require any advanced machineries and it also reduces the risks involved in the rescue operation and the probability in saving the child is more when compared to the existing system.

Keywords: Global System for Mobile Communication (GSM), IR Sensor and Closure.

1. INTRODUCTION

There is no right strategy to safeguard casualties of such bore well mishaps. The current strategy which includes burrowing the equal opening to protect the child close to the drag well during which the child has caught really. Also, it includes a lot of energy and costly assets which are not effectively accessible all over the place and through this cycle, we generally need huge space around the caught bore that we can burrow an equal bore. These impromptu methodologies include hefty dangers, including the probability of wounds to the body of the theme during the activity. Additionally, the body may trap further inside the garbage and consequently the emergency develops much more methods passing. By and large, we trust some make move courses of action. This doesn't guarantee us of any drawn out arrangement. In such techniques some very snares are utilized to convey the victim's garments and body. This may cause wounds on the body of the point. The progressive strategy includes manual work. It isn't just a period taking cycle, yet in addition hazardous in different ways. The coming of most recent rapid innovation and in this manner the developing PC Capacity gave sensible occasion to pristine robot controls. As of late numerous mishaps happened in India.

As per the NDRF report on standing working method on bore well episode reaction, India is that the main client of groundwater inside the planet, drawing around 250 cubic kilometres once every year. There are roughly 27 million bore wells in India. Reports state that since 2009, very 40 youngsters fell into bore wells, and on a mean 70% of traditional kid salvage tasks fall flat. State-wide information of bore well episodes uncover Haryana, Tamil Nadu, and Gujarat with the most noteworthy number of occurrences at 17.6% each. Next inside the rundown was Rajasthan with 11.8 %, Karnataka with 8.8%, Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Maharashtra with 5.9%, and Assam with 2.9%. Tamil Nadu being one among the states with the absolute best level of bore well episodes might be an away from of the terrible occurrence like that of Sujith's (Figure 1: State-wise bore well mishaps). Discussing the first recorded reasons for bore well mishaps, the ensuing reasons top the rundown.

1. Fell into it while play
2. opened bore well
3. Using temporary doors
5. No signboards to warn
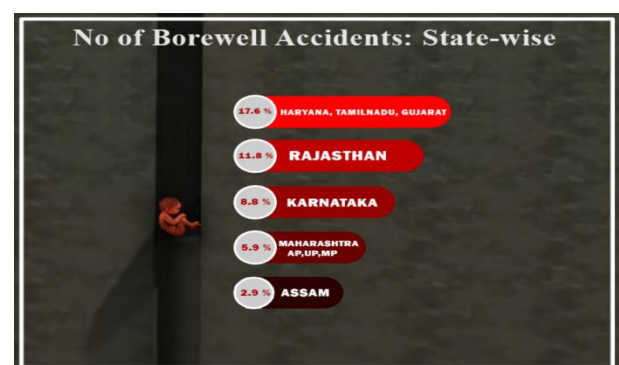6. No immediate response to be taken

Figure 1: State wise bore well accidents

NDRF has effectively managed salvage tasks the nation over from 2014 to 2018 out of which, in 15 activities the casualties were alive and in 16 they were dead. In Maharashtra alone 10 borewell mishaps occurred, trailed by nine in Rajasthan and three both in Karnataka and Gujarat. In the wake of concentrating all the cases, we found an answer for do, which results a serious procedure, which can experience the caught bore well with no help.

2. EXISTING SYSTEM

Water shortage is that the serious issue looked by the human culture. Because of dry spell and exhaustion of ground water most of the wells are penetrated on the outside of the world. Because of water shortage most of the wells are sunk. In numerous territories the wells are penetrated and left on the grounds that it as open with none legitimate covering. This relinquished bore wells became demise pits and started taking numerous guiltless carries on with particularly small kids. Presently a day's falling of youths in wells is expanding because of the inconsiderateness and fun loving exercises of the adolescents. The openings for wells are profound around 500 feet. In such cases the salvage of adolescents from such most profound borewells is kind of testing. Commonly the salvage framework for adolescents from borewells may chance the child life.

The current framework for saving the kid from borewells isn't just troublesome and furthermore extremely dangerous to spare the caught youngster life. A little deferral in activity can even cost kid life. Despite the fact that the fundamental salvage activity is taken, numerous elements, for example, expanding temperature, absence of oxygen and stickiness in such profundity will also be another danger for kid life and so far there is also no legitimate arrangement accessible for offering alleviation to such mishaps.

Figure 2: Dangerous Borewell Hole

Figure 3: Existing Method for rescuing child at 120 feet

DRAWBACK OF PRESENT SYSTEM:

- Generally, in order arrive to the subject body, an equal opening to the drag well is uncovered and afterward an even way is made. However, this technique takes time to save the life of subject. Besides, it includes huge loads of energy, and costly assets which aren't effectively accessible all over. Continuously a colossal space is needed round the caught bore which will be used to burrow an equal bore. The chance of harming the victim body is very high during the salvage activity. It takes as long as 30 hours to burrow the equal pit, by that point the child would have kicked the bucket.

- In some extreme cases to pull out the victim, shoddy courses of action are made. Some sort of snares utilized in this strategy and victims' garments or body organs gets grasped. This thing may intend to have wounds to the victim body.

3. PROPOSED SYSTEM

This project implies a new design which tracks the working status of bore well, opening and closing status of bore well covering door and it also tracks the closure which kept at around 5 feet depth which is used to prevent the children from falling into a bore well when dries up and is no longer in use. The system tracks all these things and alerts by giving notes as message to rescue team and respective department along the location.
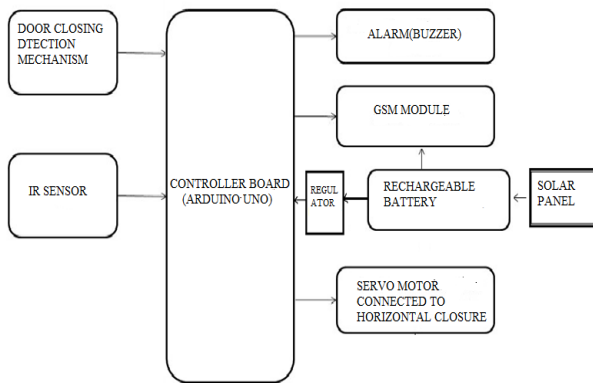
Figure 4: Block Diagram of Proposed System

The Proposed system do not require any advanced machineries and it also reduces the risk involved in the rescue operation and the probability in saving the child is more when compared to the existing system.

A. HARDWARE REQUIREMENTS OF PROPOSED SYSTEM:

i. Arduino Uno: Arduino Uno is a microcontroller board dependent on the ATmega328P (datasheet). It has 14 advanced information/yield pins (of which 6 are frequently utilized as PWM yields), 6 simple data sources, a 16 MHz quartz , a USB association, an impact jack, an ICSP header and a reset button. The Arduino Uno Board Shown in figure 5. In this project Arduino Uno is the main controller which takes data from IR sensor , door closing detection mechanism and process that information to take required actions.

Figure 5: Arduino Uno Board

ii. IR SENSOR: An infrared sensor is an electronic instrument which is utilized to detect certain qualities of its environmental factors by either emanating as well as distinguishing infrared beams. The IR Sensor Shown in figure 6. In this project the IR sensor is used to track the working status of bore well and passes that information to main controller board (Arduino Uno).

Figure 6: IR Sensor

iii. GSM MODULE: GSM (Global System for Mobile interchanges) is an open, advanced cell innovation utilized for communicating versatile voice and information administrations. The GSM Module Shown in figure 7. In this venture the GSM MODEM is utilized for cautions by offering messages to safeguard group and concern division with area.

Figure 7: GSM Module

iv. SERVO MOTOR: The servo engine is most generally utilized for high innovation gadgets in the mechanical applications like robotization innovation. It is an independent gadget that turns portions of machine with high effectiveness and extraordinary exactness. Besides the yield shaft of this engine are regularly moved to a particular point. Servo engines are predominantly used in home gadgets, toys, vehicles, planes and heaps of more gadgets. The figure 8 shows the servo engine. In this task the servo engine is utilized to close the slider when bore well isn't being used.

Figure 8: Servo motor

v. BUZZER: A buzzer is a sound gadget, which might be electromechanical, or piezoelectric (piezo for short). Commonplace employments of ringers and beepers incorporate caution gadgets, clocks, and affirmation of client input like a tick or keystroke. In this venture the bell is utilized to alarm the close by people with opening and

closer of fundamental entryway and slider. The figure 9 shows a bell.

Figure 9: A buzzer

vi. SOLAR PANEL: The term solar board is conversationally utilized for a photograph voltaic module. This module is a get together of photograph voltaic cells mounted during a casing work for establishment. Photograph voltaic cells use daylight as a wellspring of energy and create DC power. In this task the sun based board is utilized to charge the battery-powered battery
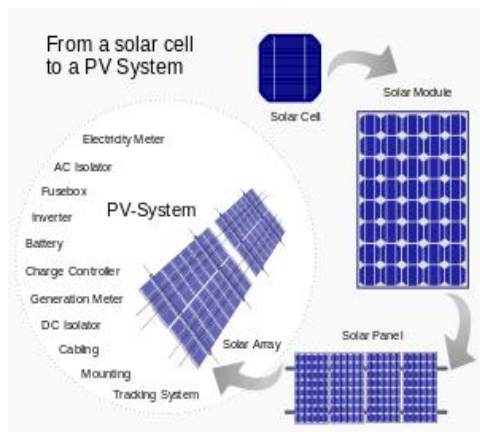

Figure 10: Solar Panel

vii. RECHARGEABLE BATTERY: A rechargeable powered battery or capacity battery or optional cell is a kind of electrical battery which is to be charged, released into a heap, and revived so often, as against the expendable or essential battery, which is provided and completely energized and disposed of after use. In this task the battery-powered battery is utilized to give power gracefully to microcontroller board and different peripherals.

Figure 11: A rechargeable battery (12V)

B. SOFTWARE REQUIREMENTS OF PROPOSED SYSTEM:

Arduino IDE Software: Here Arduino IDE is the software which is used for writing, editing and compiling program. The program is written in Embedded C.

4. WORKING

- Step1: Check, whether the covering door is opened or closed. If it is opened for longer time, the system alert with alarm.
- Step2: Track the working status of bore well using IR sensor and whether the PVC pipe pulled out and covering door cast iron is removed.
- Step3: Track whether the horizontal closure which is at around 5 feet depth using door closing detection mechanism , when a bore well dries up and is no longer in use.
- Step4: The system tracks all these parameters and alerts by giving the message to the team and respective department along location.
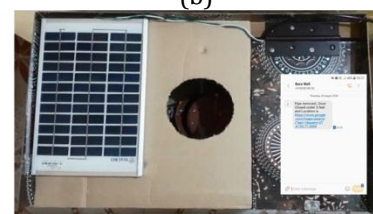
5. RESULTS

The proposed system is tested and observed that the performance of system is quite satisfactory in rescuing operation compared to traditional methods. The prototype has been designed as follows.

(a)

(b)

(c)

(d)

Figure 12: Prototype of Proposed System a). When Pipe is Placed on Bore Well   b).When Pipe is removed
c). When Pipe removed, horizontal closure closed and SMS alert to concern Department with location d). When Top Door is Opened SMS alert to concern Department
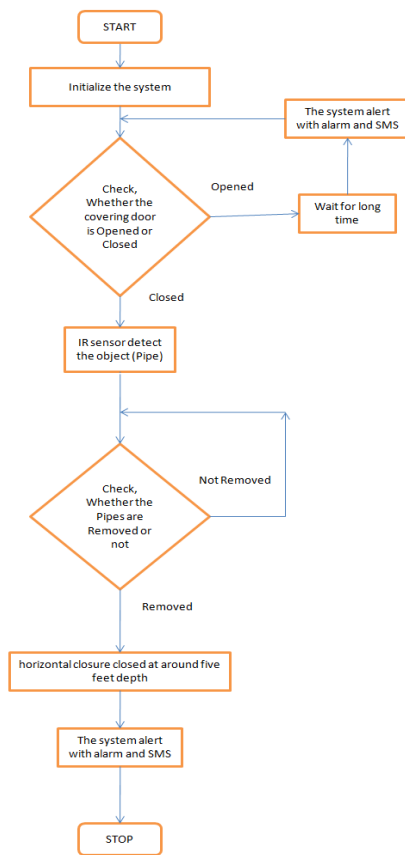

Figure 13: Flow chart of Proposed System

6. CONCLUSION

In this project, we have developed a prototype module to rescue children falling in to bore-wells; this work states a new approach which has a IR sensor which is kept at the top of bore-well hole and it helps to sense the working status of borewell. If the system senses that pipe is removed from well then horizontal closure which is kept at around 5ft depth closes and prevents the children from falling beneath.

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