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IOT Based Child Rescue System from Open Borewell

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Abstract: For past few years, there have been several an accident of children falling into an abandon bore-well which is left uncovered and get trapped. These bore-wells in turn have many innocent lives. In addition to this an ultrasonic sensor. In order to determine the feasibility of the system a prototype was designed and fabricated. The prototype consists of all mechanical and electronics set up as discussed above but in miniature version. The prototype has a control module which consists of LCD display, motor driver IC, Nodemcu inbuilt micro controller with wi-fi module, control switches, buttons and power supply unit. Present scenario there have been several incidents reported on abandoned bore-wells which are turning in to death wells. Many innocent children are being trapped into these bore-wells and losing their lives. The actual purpose of bore-wells is to save lives, but these bore-wells in turn have started taking many innocent lives. Usually these rescue operations are very lengthy, complicated and very time taking processes. This paper presents a simple and effective method to rescue the child from the bore-well. This is the main electronic unit which controls and co-ordinates the whole systems operation. The project is intended to reduce the risk involved during the child rescues operation by analyzing the simulation.

Keywords: Bore-well, IOT, Child rescue.

I. INTRODUCTION

Water scarcity is a major problem faced by human society currently. After drying the bore wells people are not closing them. There is a risk Water scarcity is a major problem faced by human society currently. After drying the bore wells people are not closing them. There is a risk that children or animals fall down into the bore well. The depth and the diameter of the bore-well is the main obstacle to rescue the child safely. As mall delay in rescue system will take the life of the child or permanent physically handicap. To solve this problem, we have designed our project “CHILD RESCUE SYSTEM IN OPEN BOREWELL”. This project saves the child’s life before it reaches the depth of the bore-well. To construct this project, we have used Nodemcu inbuilt microcontroller with wi-fi module, board IR Sensor etc.

II. PROPOSED SYSTEM

In such accidents normal rescue operations are very complicated because the process is time consuming, requires huge man-power etc. The aim of this project is to provide a better and reliable solution for this problem. This rescue system uses the high-tech electronics automatic system the block diagram of the hardware set up. Here IR1 infrared sensor is placed near to the open bore well. IR2 and IR3 infrared sensors are connected inside the bore-well. If any movement is detected near to the bore well it will detect by the IR1 sensor and send information to the Arduino Uno controller. Controller will send the alert message through GSM module to the authorized person and display the same message on the LCD display. Here only we can save the life of the victim before falling down into the bore-well. Then also if child felled down into the bore-well thenIR2 and IR3 sensor will sense the motion in-side the bore well and activate the dc motor driver. It gives long alarm. This DC motor driver controlling the two motors namely M1 and M2. M1 motor is used to rotate the vertical plate into the horizontal position to catch the child. And stop child further going into the dept. Motor M2 is used to pull up the rotated plate along with the child. After successfully saving the child reset button is provided to bring the system into the original position. This system requires the 5-volt AC voltage supply. That we are proving with the helpofadaptorwhichconverts230-voltACsupply into the 5-volt DC voltage.

WORKING PRINCIPLE

Here IR1 infrared sensor is placed near to the open bore-well. IR2 and IR3 infrared sensors are connected inside the bore well. If any movement is detected near to the bore well it will detect by the IR1 sensor and send information to the Arduino Uno controller. Controller will send the alert message through GSM module to the authorized person and display the same message on the LCD display. Here only we can save the life of the victim before felling down into the

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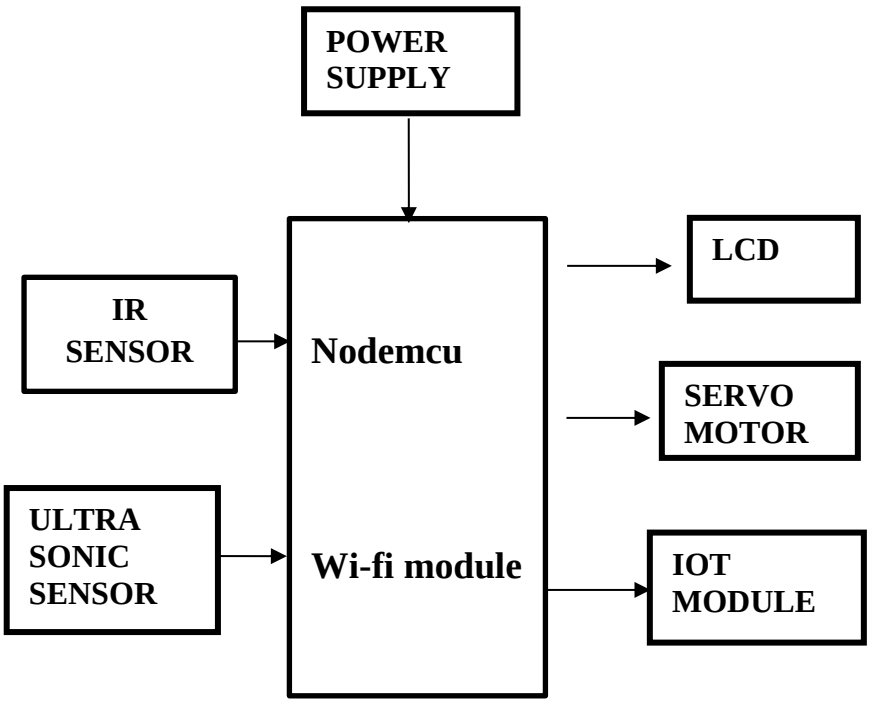

Fig. 1 Proposed System

III. MATERIALS AND METHODS

Materials used in this project are Ultra sonic sensor, Servo motor, IR Sensor, Power supply, IOT module, Relay, Wi-fi module.

ARDUINO UNO R3 MICROCONTROLLER

It has 14 digital input/output pins .The Arduino Uno R3 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

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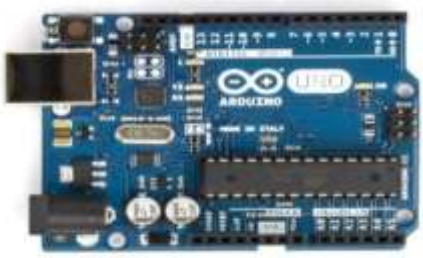

Fig. 2 Arduino UNO

IR SENSOR

An infrared sensor is an electronic device,that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called a passive IR sensor.

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Fig. 4 IR Sensor

POWER

The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm centre-positive plug into the board's power jack. Leads from a battery can be inserted in the ground and V_{in} pin headers of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

Fig. 5 Power supply

RELAY

Relays are electrically operated switches. They are used to control a circuit by a separate low-power signal or to control several circuits with one signal. The three main types of relays are electromechanical, solid-state, and reed. This overload protection relay reacts to overheating. A relay allows circuits to be switched by electrical equipment: for example, a timer circuit with a relay could switch power at a present time.

Fig. 6 Relay

IOT MODULE

An **IOT MODULE** is a small electronic device embedded in objects, machines, and things connected to wireless networks and sends and receives data..

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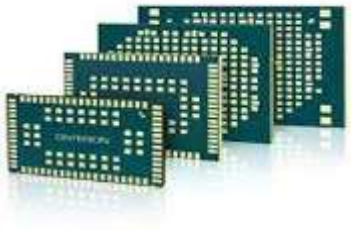

Fig. 7 IOT module

SERVO MOTOR

A servo motor is a rotary actuator that allows for precise control of angular position. It consists of a motor coupled to a sensor for position feedback

IV. RESULT AND DISCUSSION

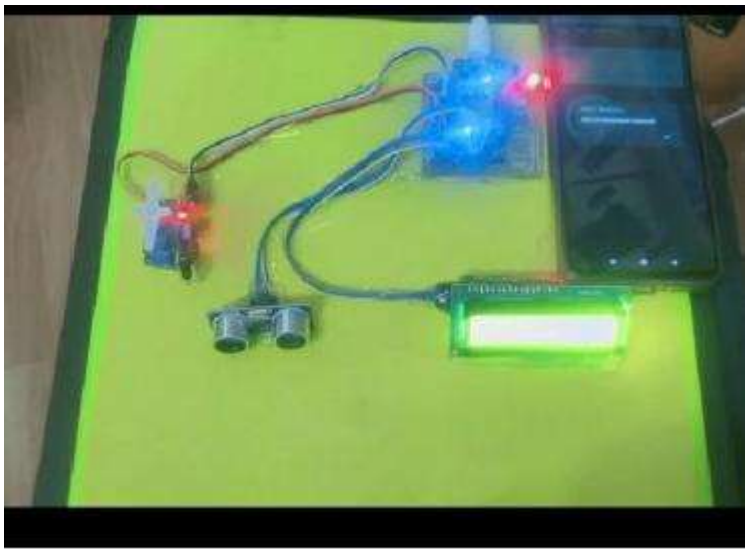

Fig. 8 Dynamic Faucet using Arduino

The IOT setup connected to the bore well detected the test object (stuff doll) felt into the bore well and message is sent using the IOT to the number which is given in the code. By using the pickup arm the test object (stuff doll) is taken out from the bore well safely.It used to rescue the child fast and it is a easy way to rescue the child.

V. CONCLUSION

The Arduino setup connected to the bore well detected the test object (stuff doll) felt into the bore well and message is sent using the IOT to the number which is given in the code. The location and depth of the test object data is sent in the message. By using the pickup arm the test object (stuff doll) is taken out from the bore well safely. Thus, we can implement this system in intelligent way for future use.

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