

**Assistance for Borewell Victims**  
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**ABSTRACT**

*According to the survey there have been many accidents of children's falling into the borewells in India. In order to save the little kids, Rescue teams working hard, spending several hours, lot of money and equipments. But in most of the cases they are unable to save the kids. Procedure used by the Rescue team in order to save the kids is very complicated and time-consuming process hence more than 70% of the rescue operation fails. Now a day due to development in technology Robots can be used to rescue child from the borewell so that rescue operation can be completed with less time and success ratio of the operation will be greater. The proposed system "Assistance for Borewell victim" is designed in such a way that it rescues child from the borewell with less time and without harming.*

**Keywords:** *Microcontroller, Robot, Wireless camera*

**I. INTRODUCTION**

In current scenario, falling of children or even adults in bore well are increasing. These accidents are mainly happened due to carelessness or playful activities of the child, Moreover most of the bore wells are drilled and left open without any proper coverings. When a child fall into the bore well, the existing rescue operations in such cases are more risky and become a no safe to the rescue team members. In existing system, a big hole is dug beside the bore well up to the depth where the child is stuck. This process involves huge human resources (military, Para medical, etc.) and machinery (JCBs, Tractors, etc.). A small delay in this process may reduce the chances of saving child alive. If the area beside the bore well contains rocks below certain depth, the chance of saving child alive is very low. Whatever may be the case the success ratio depends on lots of factors like availability of time taken for transportation of machinery to the situation, human resources and mainly the response time of various government organizations. In India according to the NCRB report of 2011 there are 5 average deaths per day in the license bore wells. At present there is no proper solution for this problem.

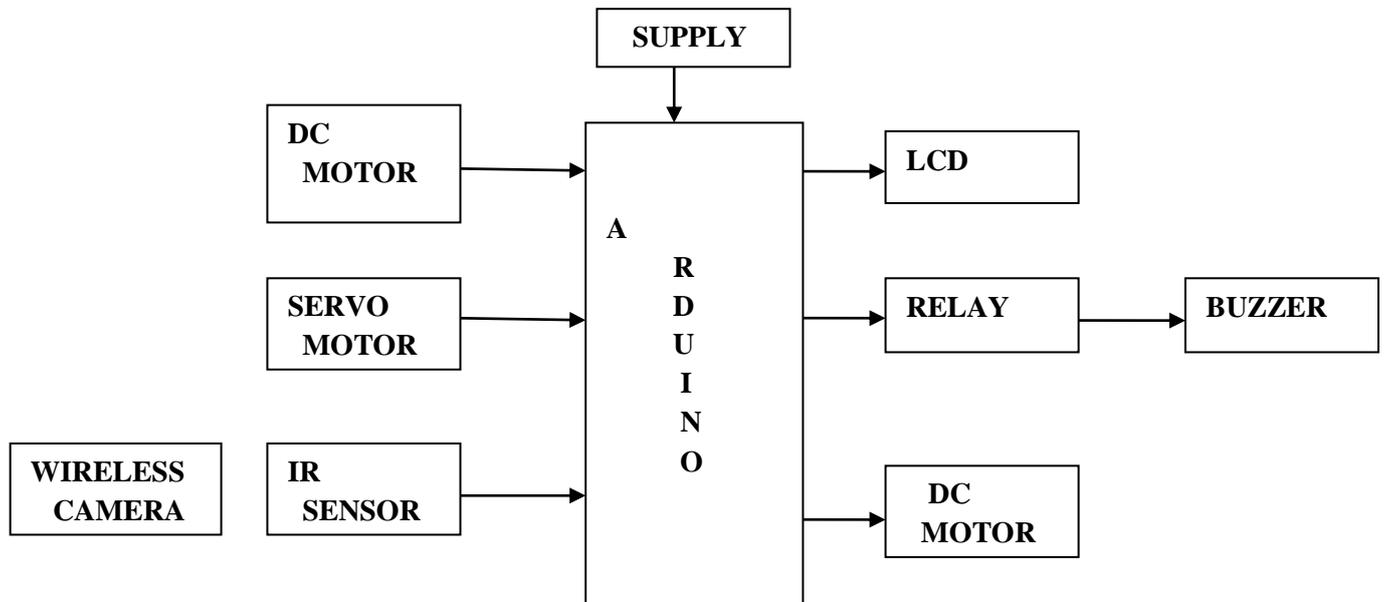
**II. RELATED WORK**

Brief literature survey was done which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to rescue of the borewellvictims .

The design of a robot (for rescue operation of a child from bore well), capable of moving inside the bore well, works according to the human command using PC, pick and placing based on arm design[1] . The robot is operated through PC using wireless Zigbee technology. The rescue operation without human intervention is discussed[2] .Here the wheeled leg mechanism is designed to go inside the borewell. A temperature sensor and LCD are interfaced with PIC microcontroller to sense and displays on LCD. The diameter of the borewell is narrow for any adult person and it will be dark inside.This makes the rescue tasks a very challenging one. The robotic system as in[3]. Attaches a harness to the victim using pneumatic arms for lifting the victim. A teleconferencing system will also attach to the robot for communicating with the victim. The facility to monitor the trapped victim are supply oxygen and provide a supporting platform to lift the victim is proposed in[4]. Robotic systems are brought in rescue operations for borewell accidents is discussed in[5]. Smart child rescue system from borewell is discussed in[6].

### III. PROPOSED WORK

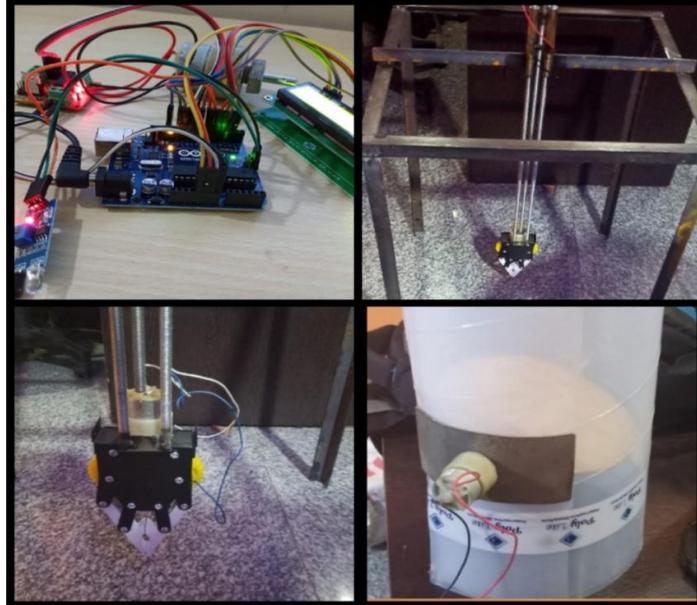
The block diagram of proposed system is as shown in the fig. It consists of hardware components such as Arduino Uno, Servo motor, DC motor, Wireless camera and Robot.



**Fig 1. Block diagram**

- a) **Arduino Uno:** The Arduino board consists of ATMEGA 328p processor with operating voltage 5v, 14 digital I/O pins out of which 6 pins provide PWM output, 6 analog input pins and 32kb flash memory. The microcontroller is used to
  - 1) Control the servo motor in order to control the movement of arms of the robot
  - 2) The DC motor to control the movement of robot into the borewell
- b) **Servo Motor:** Servo motor is used for the movement of robot arms in different precise angles. The input for the servo motor is PWM signals from Arduino. The biggest advantage of servo motor is it's high speed of operation and less power consumption.
- c) **DC Motor:** DC motor s used to move the robot inside and outside the borewell. A motor drive is used to provide current amplification since the current from Arduino is not sufficient
- d) **Wireless Camera:** Wireless camera is used to monitor the child inside the borewell it is used to direct the robot. The advantage of wireless camera is that there are no wires and hence complication is less.

### THE HARDWARE SETUP



**Fig . Hardware setup**

Assistance for borewell victims project uses an robot to get the child out fo the borewell safely.This method not only increases the chances of saving the child alive but also eliminates the harm that can be caused to aperson who would be saving the child in traditional method.The robot is used here for its good high speed operation as in this cases that time place a vital role and as fast the brought out of the borewell the chances of child surviving also increases as in the traditional method huge machines like JCB's are used to dig the well and the child out this process is tedious and time consuming.Hence we eliminate the use of huge machinery and the latency caused.

Since we know in the traditional method as we know that an alternate well is diged and from there they try to reach the child in this situation the chances of child falling in to the are higher.The movement of the robot is handled with the help of DC motor and Servo motor here DC motor is interfaced with Arduino.

### IV. HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE REQUIREMENT	SOFTWARE REQUIREMENT
<ol style="list-style-type: none"><li>1. Arduino Uno.</li><li>2. DC motor.</li><li>3. Servo motor.</li><li>4. Robot.</li><li>5. LCD.</li><li>6. Buzzer.</li><li>7. Wireless Camera.</li></ol>	<ol style="list-style-type: none"><li>1. Arduino IDE</li></ol>

## V. CONCLUSION AND RESULT

In the rescuing operation time is a vital factor which alone can determine the success or failure of the whole operation. Thus, it has been designed keeping the entire obstacle in mind that may arise during the operation. We like to conclude with the help of our research project we are able to rescue without any damage.

The proposed system aims to solve the problem faced during the traditional method of saving the child falling into the borewell. In the proposed system the chances of child alive is more and there is no usage of huge machinery.

The robot is known for its high speed operations and hence it is useful in this case as it is required to save life of a child and the sooner we get child out the chances of child surviving are more.

## REFERENCES

- [1] B. Bharathi, B. Suchitha Samuel Design and Construction of Rescue Robot and Pipeline Inspection Using ZigBee International Journal of Scientific Engineering and Research (IJSER) volume1 Issue 1, September 2013.
- [2] Palwinderkaur, Ravindharkaur, Gurpreetsigh Pipeline Inspection Using ZigBee International Journal of Scientific Engineering and Technology (IJRET) volume Issue:03 Issue:04-April-2014.
- [3] Manish Raj, P. Chakraborty and G. C. Nandhi Rescue Robotics in borewell Environment Cornell University Library [V1] Mon, 9 June 2014.
- [4] John Jose Pottery robot for borewell rescue Amaljothi college of Engineering Vol 10, June 2009.
- [5] V. Venmathi, E. Poorniya and S. Sumathi Borewell Rescue Robot, International Journal of Computer Applications (09758887) Vol 113 No.14, March 2015, PP 22-25.