



ARDUINO BASED CHILD RESCUE SYSTEM FROM BOREWELLS

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ABSTRACT:

In present scenario there have been several incidents reported on abandoned borewells which are turning in to death wells. Many innocent children are being trapped into these borewells and losing their lives. The actual purpose of borewells is to save lives, but these borewells in turn have started taking many innocent lives. In several cases the rescue operations are done by big machines and lot of man power involvement. Usually these rescue operation are very lengthy, complicated and very time taking processes. [1] The paper presents a simple and effective method to rescue the child from the borewell. The traditional way to rescue the child is to dig a parallel pit t adjacent to the bore well. This method is difficult, lengthy and also risky to rescue the trapped child. In the proposed method mechanical system moves inside the borewell channel and moves its gripper arm in accordance with the user commands given. The hardware is interfaced to the PC and arduino setup is used to control the mechanical set up.

Keywords: *IOT, borewell, keypad, camera.*

1. INTRODUCTION:

India being an agrarian nation, farmers depend for the most part on groundwater

for water system. With expanding population, lesser land possessions and urbanization more profound bore wells are burrowed for groundwater

deliberation. After yielding the water, the bore wells would left uncovered. So that, the vast majority of children accidentally approaches the well and falls into it, which is the only reason behind these sorrow mishaps presently. In our country, bore well deaths are happening frequently. Now-a-days, we often listen regarding the child tumbling under bore wells over both urban, sub-urban and towns. The recurrence from claiming such news is expanding step by step. The vast majority of the children unknowingly approaches the wells and falls into it. After instructing everybody regarding these bore well accidents, there appeared on be no progress in the number of tearful mishaps. Over this children, some of them lives. To eradicate such problems in rescue method, a robot is created with two broad mechanisms which are belt mechanism and robotic arm hardware unit. A web camera to monitor the child closely and also video surveillance is available for making continuous interaction with the trapped child for moral support. It consists of robotic arm

and belt to rescue the child and the setup is uplifted safely with precautions. In this proposed system, there is no need of digging a new well parallel to the bore well. In the parallel pit method, we need lots of human resources, machineries and also army personnel. The parallel pit method are shown in Fig.1. It would take at least 30 hours to dig a new well, by that time the trapped child may have died. Servomotors are required to accomplish the robot developments and ensure that the child has been held securely by the robot and then the whole arrangements are uplifted by utilizing Dc engine.

2. LITERATURE SURVEY:

Bharathi.B et.al[1] depicts the plan of a robot for saving the kid from bore well. This robot is fit for moving underneath the drag well, as per the human comment by Pc, it will pick and spot dependent on the arm structures. It is worked through Pc with the assistance of remote zigbee innovation and remote camera which is used for video surveillance. The main drawback is that the arm structure can't give adequate security to the child while lifting. Manish Raj et.al[2] depicts as the dimension of the drag well is



slender for any grown-up in difficult and bright goes dim inside it, the rescuing task in that circumstance is very difficult. The automated framework which will join an outfit to the child utilizing inflated arms for rescuing the child. The video chatting method is also available for speaking with the child. The robotic arm is like clipper, so that the lifting mechanism is very difficult. Giridharan.M et.al[3] described about designing a robot consists of three engines to save a child on the drag well. The primary engine is used for movement which is up and down by using screw bar. Second engine is utilized for grabbing reason with the surface of lead screw arrangement. Another engine is used to rescue the child through rack and pinion arrangement. Based on the location of the child, the whole arrangement can be pivoted. Then the child is lifted from the bore well. Arthika.S et.al[4] described about the mechanism of safeguarding child from the bore well. The temperature sensor is used to detect the temperature and similarly gas sensor is used to detect the gas spillage in the specific region. ARM compression and expansion method is used for roper up and down movement. The robotic arm is using relay operation for picking and placing the child.

This method provides safeguarding activities in less time. The major drawback is lifting of child is very difficult by using gripping arm.

Some failure cases are also reported. One of such is case of a 14 year old girl from Chevella, 60km from Hyderabad, rescue operations are rendered by National Disaster Response Force (NDRF) and police failed to extricate the child from the 60-foot deep pit. In this case the parallel pit method seems failed. Not only parallel pit method but the rescue robot also failed because of its wider area of arms. The second case is found in Karnataka. Another rescue team trying to save the trapped six-year-old girl who fell into an abandoned borewell in Zunzarwad failed to retrieve the girl. Another is case of Kaveri who accidentally slipped into an abandoned borewell when she had gone to collect firewood along with her mother. Several rescue attempts have been made for three days but did not yield any results. Attempts to reach Kaveri by drilling the area around the abandoned borewell failed as the machines kept hitting boulders and hard rocks. Both drilling teams from the National Disaster Relief Force (NDRF) and Hatti Gold Fields tried to create a tunnel to reach Kaveri. However, lack of coordination between the two teams further delayed the

rescue. “The difference of opinion among the team members halted operations several times on Monday. The teams failed to judge the right place for drilling and hence kept intercepting boulder after boulder,” as said by an official on the site. In the above incident also, the rescue operation failed because of time dragging processes. In view of all the above failures the proposed system is prepared to overcome the short comings.

3. PROPOSED SYSTEM:

In present scenario there have been several incidents reported on abandoned borewells which are turning in to death wells. Many innocent children are being trapped into these borewells and losing their lives. The actual purpose of borewells is to save lives, but these borewells in turn have started taking many innocent lives. In several cases the rescue operations are done by big machines and lot of man power involvement. Usually these rescue operation are very lengthy, complicated and very time taking processes. The project presents a simple and effective method to rescue the child from the borewell. The traditional way to rescue the child is to dig a parallel pit adjacent to the bore well. This method is difficult, lengthy and also risky to rescue the trapped child. In

the proposed method mechanical system moves inside the borewell channel and moves its gripper arm in accordance with the user commands given. The hardware is interfaced to the PC and arduino setup is used to control the mechanical set up.

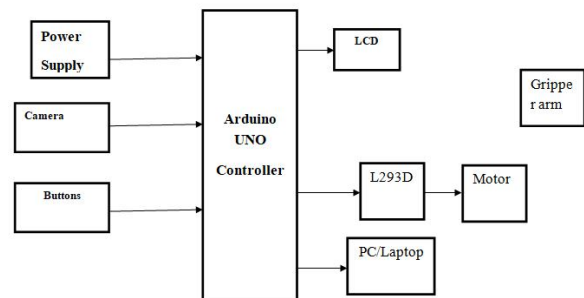


Fig.3.1. Proposed diagram.

4. RESULTS EXPLANATION

The proposed system is tested with a test object (stuff doll) and is observed the performance of the system is quite satisfactory in rescuing operation also completed in very less time compared to traditional methods. The prototype has been designed keeping the possible practical issues in mind. The structure can be made strong enough to sustain all possible loads. A high resolution camera is used in the system to identify the position of the baby. The gripper mechanism is operated using a switches in order to rotate the arm (to align in proper position) and to open and

close the grippers on the arm as shown in fig.

OPERATION:

Even though there are so many methods existing, still there is a need of more simple and sophisticated rescue equipment. Here we are proposing a system called arduino based child rescue system from bore well. In this system, there is no need to dig big pit parallel to the bore well up to the depth where the child is stuck. Hence may not depend on the huge amount of human resources (military, Para medical, etc.), and machinery (JCBs, Tractors, etc.). Therefore the delay involved in this accumulation of resources may be reduced and the chances of saving child alive are increased. The exciting method uses a highly advanced microcontroller, well developed accurate hand gripping mechanism (capable of carrying loads about 5kg) and a visual feedback system using a high resolution camera the project is implemented successfully. The following figure7 shows the main building blocks of the method.



Fig.4.1. Hardware kit.



Fig.4.2. OUTPUT results..

5. CONCLUSION:

The Proposed system is predominantly intended to spare numerous existences of youngsters who fall inside the drag well. In the previous 15 years, bunches of lives had been lost by tumbling into the bore well since burrowing a pit adjacent to the drag well is time consuming process. By adapting this system, we can rescue the life of the child within a short span of time. The security system gives extra wellbeing measures by putting airbag



under the passage which ensure the child if there should be an occurrence of any gripper disappointments. The Robotic arm will pick the belt and fix it to the child appropriately. It additionally incorporates web camera for video surveillance. These robots are lifesaving machines. It can save many lives of the children, so it is very beneficial to use this robot.

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