SAFEGUARDS FOR WATER STORAGE BODIES

Dr.Dinesh Kumar DS
Professor, Dept. of ETE
KSIT Bangalore, India

Ankitha N
Dept. of ETE, KSIT
Bangalore,India

Litchitha M gowda
Dept. of ETE, KSIT Bangalore,
India

Mruthyunjaya G
Dept. of ETE,
KSIT Bangalore,
India

Vaishnavi S
Dept. of ETE, KSIT
Bangalore, India

Abstract— **In present time, children fall in the Borewell due to the carelessness nature of the people in society. The currently available systems to save the child are less effective and costly too. Thus, the society needs a new technique which is more efficient and effective. In most cases reported so far, a parallel hole is dug and then horizontal path is made to reach the child. It is not only a time taking process, but also risky in various ways. The borewell rescue system can move inside the same borewell where the child has been trapped and performs various actions to save the child. CCTV camera is used to continuously monitor the child's condition. This system has a high-power LED which acts as a light source since light intensity inside the hole will be less. The advancement in the field of automation along with the mechanical design has a great impact on the society. This project includes series of process development from hand drawn sketches to computer generated design. The modern equipment's are implemented for various parts of the system, since the system performs a life rescuing activity. The light weight servomotors are implemented for the system's operations. Borewell rescue System is a human controlled computerized system embedded with additional safety devices.**

Keywords— *Safeguard, water bodies, Krish Honda,life saving*

I.   INTRODUCTION

Karnataka is predominantly an agrarian state 80% of the area depends upon the monsoon for agriculture .If the rain water is prevented from draining away and stored properly, the ground water table gets recharged and the crops can get adequate water during critical condition .Government of Karnataka has initiated, as a part of the Suvarna Karnataka year celebrations, an ambitious program to encourage the small and marginal farmers, who are solely dependent on agriculture, to construct a Suvarna water bodies or wells by providing a maximum subsidy. This Honda provides water to people and animals during drought situation and improves farmers agricultural productivity.5692 village panchayats in 745 blocks coming under 176 taluks of the 27 districts of Karnataka have been brought under the purview of this scheme. But the problem is due to these open water tank it is not properly closed many animals and humans are losing their lives our project is to save the lives who fell into the water bodies peoples and animals unknowingly tend to fall into the water bodies. rescuing those persons and animals is another hectic task. There are no any proper or technical methods to save the persons who fall into water bodies rescuing the lives with less time compared to all other existing methods is the aim of this project. Lifting mechanism is the unique technology implied in this project.IR sensors and motors are used in this project. An innovative concept proposed in this paper is to handle water bodies rescue operation. Children often falls in bore hole which is left uncovered and get trapped. It is difficult as well as risky to rescue trapped child from these Hondas. Hence, we propose a system of designing robots for the rescue of a child in a water bodies. We aid the child by continuous monitoring and supply of necessary items to survive using technical methods. Bores which yielded water and subsequently got depleted are left uncovered and small children without noticing get trapped inside. To aid in such a life-threatening situation we hereby propose 'Krishi Honda   Rescue Systems'.

II.   PROBLEM STATEMENT

In past few years, children get trapped into the water bodies. The rescue process to save the child from bore well is long and complicated. To avoid this, there have been several rescue robots designs available currently. Even now the existing robots are not satisfactorily used to rescue the child from bore hole. For this reason, a morphological chart is designed from existing and new robot designs. From the morphological chart, various combinations of rescue robot design are formulated. Finally, the designs are compared for the best performance. A lot of other hassles are avoided by this alternative technique. The proposed design is to rescue trapped child from bore well within short period and with safely Farm ponds are common nowadays in rural areas. But the safety measures in the pond are drastically low, there are chances of people and animals drowning in, there is no any technical methods to rescue the person, and there is no any proper equipment's. If they fall in it accidentally and there are less chances for survival this drawback guided us to prose this system.

III.   LITERATURE SURVEY

[1]. N. Md Saad, (et_al) - Nov. 2016- "WIRELESS PIR & D6T THERMAL SENSOR BASED LIGHTING AND AIR CONDITION CONTROL DEVICE FOR BUILDING". This paper discussed on the implementation of wireless passive infra-red (PIR) sensor based versus thermal sensor based lighting and air-conditioning control device for application in lecture hall. Two systems are discussed. In the first system, the passive infra-red (PIR) sensors are used to detect the human presence in the building area. Lighting systems are automatically turned on/off if any movement detected by the PIR sensors. The air- conditioning systems are automatically turn off with certain time setting delayed. In the second system, the thermal sensor based (Omron D6T) is used for human body temperature detection in the building area. The Zigbee wireless sensor network has been used to transmit and receive data from the control circuit for lighting and air-conditioning driver circuit. Overall analysis about the control device including software and hardware development, the performance and comparison of D6T thermal sensor and PIR sensor, and the performance of the controller have been discussed in this paper.

[2]. K. Borders, (teal) - may 2006 – "SIREN: CATCHING EVASIVE MALWARE". With the growing popularity of anomaly detection systems, which is due partly to the rise in zero-day attacks, a new class of threats have evolved where the attacker mimics legitimate activity to blend in and avoid detection. We propose a new system called Siren that injects crafted human input alongside legitimate user activity to thwart these mimicry attacks. The crafted input is specially designed to trigger a known sequence of network requests, which Siren compares to the actual traffic. It then flags unexpected messages as malicious. Using this method, we were able to detect ten spyware programs that we tested, many of which attempt to blend in with user activity. This paper presents the design, implementation, and evaluation of the Siren activity injection system, as well as a discussion of its potential limitations.

[3]. Juan carral, (et_al) - april 2015- "FISHING GROUNDS INFLUENCE ON TRAWLER WINCH DESIGN" Although Spain cannot boast of noteworthy fishing grounds of its own, the tradition of fishing is deeply rooted there. This country has developed a huge, deep-sea fleet that can easily adapt to operating in a range of international fishing zones. Across these zones, the fishing winch stands out as an essential piece of equipment. If it works well, a vessel's fishing capacity is assured. The aim of this study is to determine which fishing winch is the most suitable for operating in the numerous fishing grounds frequented by the trawlers from the Spanish fishing fleet. For each fishing zone, therefore, a relationship will be established between fishing winch design parameters and the depth in which the fishing gear works.

This activity is directed towards a specific fishing ground and species, which in turn determine the type of boat and fishing system used. Different equipment is needed because depths vary. Hence, the type of system changes. However, it would be interesting to see how this variation affects fishing winch design for far distant fishing conditions in terms of drum capacity, traction and rendering and recovery speeds.

[4]. Matthew V. Bilskie, (et_al) - July 2019- "UNSTRUCTURED FINITE ELEMENT MESH DECIMATION FOR REAL TIME HURRICANE STORM SURGE FORECASTING" A previously developed research-grade (e.g., high-resolution) unstructured mesh of the northern Gulf of Mexico (named NGOM3) is optimized to produce a computationally efficient forecast-grade mesh for deployment in a real-time hurricane storm surge early warning system. The real-time mesh is developed from a mesh decimation scheme with focus on the coastal floodplain. The mesh decimation scheme reduces mesh nodes and elements from the research-grade mesh while preserving the representation of the bare-earth topography. The resulting real-time unstructured mesh (named NGOM-RT) contains 64% less mesh nodes than the research-grade mesh. Comparison of (ADCIRC þ SWAN) simulated times-series and peak water levels to observations between the research- grade and real-time-grade meshes for Hurricanes Ivan (2004), Dennis (2005), Katrina (2005), and Isaac (2012) show virtually no difference. Model simulations with the NGOM-RT mesh are 1.5–2.0 times faster than using NGOM3 on the same number of compute cores.

[5]. ASHA BELURU, G. M.(et_al) - December, 2019- "IMPACT OF KRISHI BHAGYA YOJANAON MIGRATIONMOBILITY AND EXPENDITURE LEVELS OF FARMS IN NORTH EASTERN KARNATAKA REGION" An economic analysis". Krishi Bhagya Yojana (KBY) is a new flagships scheme launched by Karnataka state Government in the year 2014 to achieve revolutionary change in Karnataka's farm sector. Under this scheme, Government committed to transforming agricultural sector by increasing farm productivity. The main aim of the scheme is to help farmers to adopt modern technologies that help to increase water use efficiency, and in the process obtain more crops per drop of water. This scheme supports farmers to make up krishi honda with polythene lining, install pump, sprinkler irrigation system and growing high value horticultural crops under shade net/ polyhouse. Present study was conducted to know the impact of KBY on migration, mobility and expenditure level of beneficiaries. The study revealed that, the duration of migration and mobility of farmers reduced to 19.91 and 15 per cent, respectively after the implementation of KBY and it was further noted that compared to beneficiaries, the mobility was higher among nonbeneficiaries. The per cent change in migration and mobility of beneficiaries over non-beneficiaries was -33.33 and -28.57, respectively. There was 13.53 per cent increase in consumption and development expenditure of beneficiaries of KBY over non-beneficiaries.

[6]. Robert B. Knudsen, (et_al)-april 2004- "ROPE FOR HEAVY LIFTING APPLICATIONS" A large diameter rope having improved fatigue life on a sheave, pulley, or drum is disclosed. This rope includes a blend of HMPE filaments and liquid crystal polymer filaments Selected from the group of lyotropic polymer filaments and thermotropic polymer filaments. The rope may be constructed as a braided rope, a wire-lay rope, or a parallel core rope.

[7] Soo Siang Teoh, (et_al)- Nov. 2016- "THERMAL SENSOR BASED HUMAN PRESENCE DETECTION FOR SMART HOME APPLICATIONS" Electrical appliances are one of the most important necessities in the modern world. With the advancement of technologies, modern electrical appliances can accomplish various tasks effectively for the convenient and comfort of human life. However, with the increase in the number of household appliances since the past few decades, the demand for residential electrical energy has consistently in the increasing trend. To prevent energy wastage, it is desirable to have a smart control system that can automatically turn off the appliances that are not in use. In this paper, an intelligent electrical appliance control system is proposed to control the switching of household appliances based on the detection of human presence. Instead of using a piezoelectric (PIR) sensor which is commonly used for human motion detection, this system uses a thermal sensor which is also able to detect stationary human and provide accurate location of human in the detection area. A calibration method is introduced to determine the proper temperature threshold for effective human detection.

[8]. During crisis every single minute is precious and transmission of critical data is very essential for the rescue operation to be successful. The sensors equipped with the device record and transmit the data and as the MCU is connected to network wirelessly it can be sent to locations which are not in human reach. This project in an attempt which provides a solution while keeping economic and technical constraints in consideration.

[9]. According to the hardware components, the prototype for human detection robot functions properly. The basic principle is represented by the design, in which the robot estimates obstacles and moves in accordance with the passage. As the robot moves, it covers a large amount of ground, reducing. the need for numerous sensors. It will be simple to save large groups of people at catastrophe areas with this technology. The approach is a simple and cost-effective way to detect humans. This will also be utilized to detect humans in the field of battle, as well as for security at jeweler stores, museums, and other places. Both the PC and the remote will control the robots.

[10]. It is without a doubt that the development and studies for rescue robotics is of great importance to the modern society. Natural and human disasters occurs regularly and it is important that help can arrive fast enough. Rescue robot are the increasing level of technical parts involve in our today life. one the other side it is always good that the rescue robot increases in development with better performance and it can handle all the situation as needed.

[11]. The aim of this paper is to give a lower cost human detect rescue robot for improving country rescue mission in disaster situation. The developed robot is joystick control with IOT which will help user to drive the robot easily. ZigBee module is used for data transfer to make the system performance reliable inside the rescue area. Though there are lot of USAR rescue robot available with many features and different sensor but they are high cost, but the sensors used in this project are easily available and low cost. We are created a robot with two different types of human sensing in order to get higher efficiency in rescue mission. The first type is a PIR sensor which detect human in the spot by their radiated infrared wave and second type is a wireless camera to see the existence of human in disaster area. Because of the two types of human detection system the system is reliable for rescue operation.

[12]. The purpose of the proposed system is to provide a cost-effective robot for rescuing human beings in catastrophic conditions. The proposed system is superior to other existing robots due to the use of sensors that are cheaper and easily available. It is not feasible for rescue personnel to individually visit the site (war field, earthquake-stricken area, mines etc.) and check who is alive and who needs rescue. So, in such circumstances, the proposed system can be of great importance. It

can be deployed to detect alive human beings and send the information regarding the situation of the spot to rescue team for proceeding further rescue operation. Furthermore, the reliability of detection is enhanced by two level sensors. The first level sensor is PIR sensor which detects the motion of human. This is primary sensor. The second level sensor used is IR sensor. It is used to detect the obstacle that comes on the way of robot. So, if one sensor fails, other sensor can also provide sufficient information in conjunction with the wireless camera mounted on it. This prototype can be further enhanced in the future by incorporating an IR camera that can exactly capture IR pattern emitted by human body. In addition, to know the exact location, GPS system can be added. For increasing the range of communication with the rescue team, GSM module can be included. Furthermore, metal and bomb detector can be used to protect from possible damage.

[13]. In order to meet the ever-increasing demand for water, bore wells are dug. But these are usually left uncovered and children fall into it. The main aim of our project is to save the child from the bore well, so we proposed a system of designing an adjustable diameter robot for the rescue of a child from borewell. We aid the child by continuous monitoring using camera and supply of necessary items mainly, air filler which supplies oxygen for the survival. Robot for bore well rescue offers solution to this situation. This system will attach a harness to child using robotic arms for picking up. It includes an infrared transmitter and receiver to calculate the distance to the child. A temperature sensor is used to measure temperature and gas sensor is used to detect the presence of any toxic gas.

[14]. In this paper, a multi-functional search and rescue robot system based on Vision technology is developed. The system is likely to help the rescuers to detect hazardous substances and search human in the ruined area. As ongoing work (outlook), the following issues are under investigation: (1) Collection of data from the robot system with different states which are with action and without action; (2) Quick analysis of the data from all sensors, (3) Improvement of real-time performance.

[15]. In this paper we presented our experience and experimental results of using sensors designed and developed for a team of USAR robots that competed in the Robocopy Rescue 2001. Theist test course offered a semi-realistic environment for ex- peri mentation with the sensors. We hereby tried to investigate minimal requirements for satisfactory performance in the NIST.

IV. METHADOLOGY

As shown in the System architecture, this System design a mobile rescue system based on Arduino to help the people on time which are trapped in water bodies. The entire process takes place within a few seconds as the system is controlled by an Arduino unit. IR sensors are infrared sensors which detects movement of people with the help of changes in the infrared (heat) levels emitted by surrounding objects. The human body emits thermal radiation at a wavelength of about 10 microns. It is received and manipulated by the IR sensor to detect human beings. It operates at 5V DC. The motion of the human being can be detected by checking for a sudden change in the surrounding IR patterns. Obstacle sensor detects the obstacle and sends the analog signals to the Arduino. Arduino is programmed to guide the system automatically depending on the obstacle.
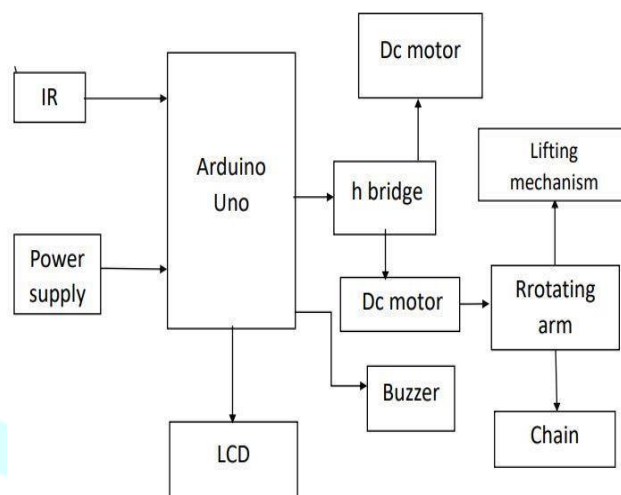

Fig 1 - System Architecture

Data Flow Diagram - A dataflow diagram is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system without going into detail, which can later be elaborated. DFDs can also be used for the visualization of data processing. A DFD shows what kind of information will be input to and output from the system, how the data will advance through the system, and where the data will be stored.
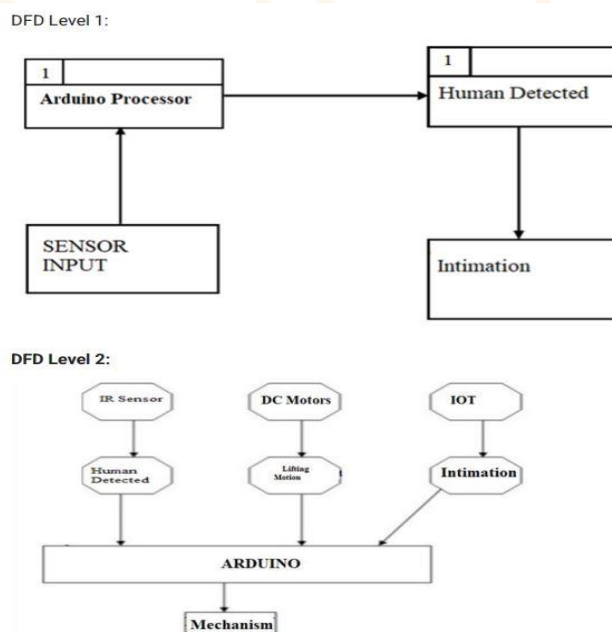

Fig 2 – Sequence Diagram

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario.

Use case Diagram: A use case diagram at its simplest is a

representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. While a use case itself might drill into a lot of detail about every possibility, a use case diagram can help provide a higher-level view of the system.
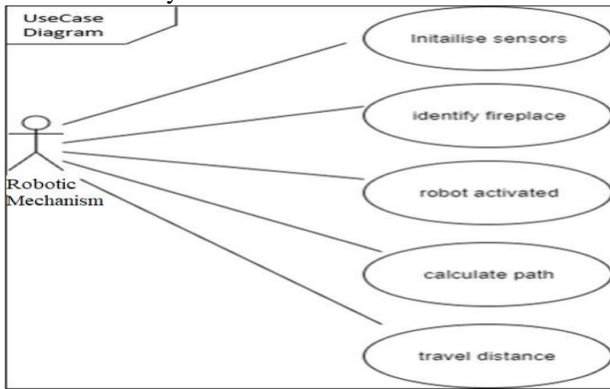

Fig 3 – User Case Diagram

Implementation - 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 water bodies. In this system, there is no need to dig big pit parallel to the water bodies up to the depth where the child is stuck. Hence may not depend on the huge number 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 main aim of our project is to save the child from the water bodies. Firstly, the system checks for the fall of the child. If the system detects the child, then it will read the sensors values. These sensor values get updated to the concerned person and it will turn on the lifting mechanism.
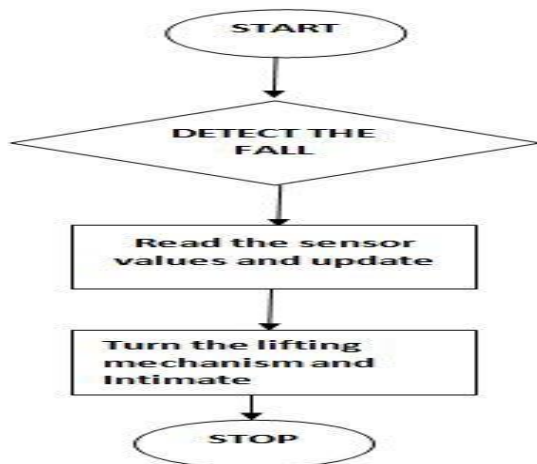

Fig 4 – Implementation

Even though there are so many methods existing, still there is a need of simpler and more sophisticated rescue equipment. Here we are proposing a system called Arduino based child rescue system from Krishi Honda. In this system, there is no need to dig big pit parallel to the water bodies up to the depth where the child is stuck. Hence may not depend on the huge number 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.
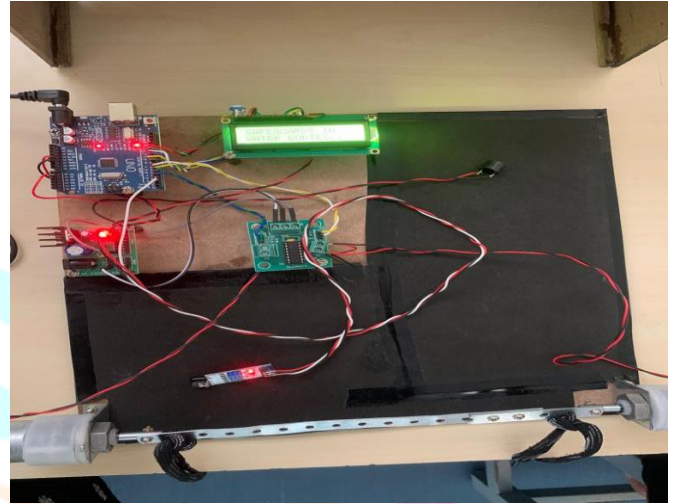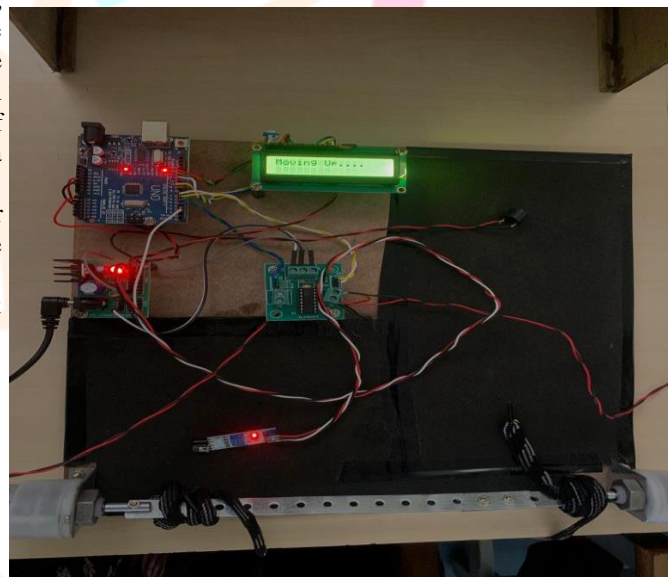
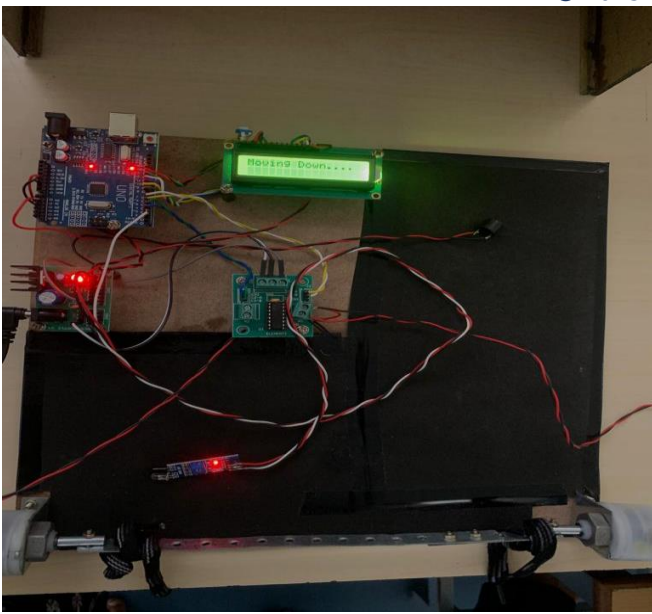**V.RESULTS**

Fig 5 – Project Model

Fig 6 – Person Detected

Fig 7 – Person Rescued

Fig 8 – Lifting Up

Fig 8 – Back to original position

VI.   CONCLUSION

A lot of lives have been lost due to falling in water bodies because it involves digging a pit beside which is a time-consuming process. The proposed system is to overcome all these difficulties. This project is used to reduce human efforts for rescuing operations from Hondas. It performs rescue operations in very less time as compared to traditional methods. 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 my research project I can rescue without any damage.

VII.   FUTURE SCOPE

In future we can use this project in several applications by adding additional components to this project. The structure is made strong enough to sustain all possible loads, though it can be flexible at the same time to adjust wider range of bore diameter and any change in the diameter of Hondas. we can send these robots to dangerous zones by connecting smoke sensor to the robot we can get the information related concentration of smoke or gases in respective fields and sensor will detect the poisonous gas and it gives information to the Microcontroller and microcontroller gives the information to the transceiver from that we can get the data on the PC side.

REFERENCES

[1] Kukkamudi Nikhil Chakravarty1, Kota Nachiketha Sarma2, Shatrughna Kashyap J3, Pampana Kavyasri4, S. Madhava Reddy5, Rescue Robot using ESP Microcontroller, 01 | Jan 2020

[2] Mukesh kumar, Ratnesh kumar Gupta , Priyanand pritam Abhishek Anand , Mohd. Alam, DESIGNING OF SMART RESCUE ROBOTICS SYSTEM, 03 | Mar -2018 [3] Ms.A.K. KAVITHA1, M. KEERTHANAH2, K.B. BHAVYA3, J. JANANI4, Microcontroller based Human Detection Robot, 12 | Dec 2021.

[4] G Badri Narayanan1, K Balaji 2, G Deepika3, P Dinesh4, R V Preetha5, SEARCH AND RESCUE SYSTEM BY USING CAMERA RESCUE ROBOT, 03 | Mar 2019.

[5] A SWAPNA1, K. ARCHANA2, A new approach for detecting alive human beings in devastating environments using a low cost autonomous robot, 04 | Apr -2018.

[6] Arthika, S., S. Chidammbara Eswari, R. Prathipa, and D. Devasena. "Borewell child fall safeguarding robot." In 2018 International Conference on Communication and Signal Processing.