CHILD SAVER MACHINE AND WIRELWSS MONITORING OF CHILD IN BOREHOLE RESCUE OPERATION SYSTEM

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ABSTRACT

A child's life may be at jeopardy if they were to fall in the open borewell. Traditional techniques, which often involved a lengthy and potentially dangerous process of parallel digging, required a large number of workers and consumed a great deal of time. However, numerous cutting-edge technology are already included into the suggested solutions. Fast and modern technologies are necessities in today's world. The suggested rescue systems may be implemented with the help of a camera, an LED, the well's internal temperature, pressure, and altitude, as well as the necessary hardware components. Using a wireless camera, modern technology allows for video monitoring in a computer. Regarding this undertaking. We employ a grappler to retrieve the youngster from the bore hole while simultaneously monitoring environmental factors such as temperature, pressure, and altitude, and supplying air to the well. Blynk, an IoT-based server, is the backbone of this entire system. Through this we exchange and monitor the information of a borewell.

Keyword: blynk app,iot, borewell

1. INTRODUCTION

The most pressing issue that people face on a daily basis in the current context is the increasing water shortage. Little ones who don't pay attention might fall into the hole that was excavated for the bore-well and become imprisoned. Most of the time, these mishaps occur because the youngster was either too busy playing or too distracted to pay attention. There is a real chance for increased robot strength and knowledge of novel control theory approaches brought about by the advent of cutting-edge methodology. There are a variety of ethical robotic uses for the current robot control system. When it comes to manipulation in simulated and controlled settings, robots have shown to be quite effective. If the infant were to fall into an open bore-well, rescue efforts would have been nearly fruitless. To methodically remove the ensnared corpse, we are creating a robotic device. A lightweight device that may be simply installed into a bore-well and will methodically retain the trapped corpse will be provided. No need to dig a hole perpendicular to the borewell is inherent in this method. We can save the infant faster with this equipment than with the convectional procedure. the "Child RescueSystem in Open Bore-Well" mechanism. These kinds of incidents have resulted in very low survival rates. It was not always easy to recover the subject's corpse in these instances. Most victims were reportedly harmed, even if they were rescued late. We offer a different, more practical, and practicable plan to fix these rescue operations' issues. In order to remove the imprisoned corpse in a methodical fashion, we are creating a robot machine. A gear assembly will regulate and support this machine assembly, which is itself supported by a cable wire.Under this alternate plan, digging a hole parallel to the bore-well is unnecessary. The operation will be carried out by the remotely operated robot as it descends the bore well. This other method also eliminates a number of other problems. It is a challenging and very dangerous mission to free these youngsters who are stuck in an exposed bore-well. The child's life might be lost if the rescue mission is even slightly delayed. It is also not simple to rescue the youngster from the cramped conditions of the bore wells. One possible answer to these types of circumstances is the robot for bore hole rescue system. Quick, cheap, and risk-free.

2. Existing System

Enabling a child to be rescued safely in the event of a fall into a bore well is the primary goal of this research. A person on the outside can do this by directing a robot

to accompany the youngster as they descend down the bore hole. In the current setup, a large hole is excavated adjacent to the bore well until the youngster reaches the depth at which they get trapped. If these resources are not accumulated quickly enough, the odds of preserving the child's life might be reduced. There is virtually little hope of preserving the child's life if rocks below a particular depth are present in the region surrounding the bore hole. During the rescue effort, the biggest challenge is the absence of air and light sources within the bore hole. The youngster who is stuck in the bore well cannot be rescued with the current machinery. Currently, there is no tried-and-true method for rescuing people in such situations.

2.1 PROPOSED SYSTEM

The overarching goal of this project is to develop and build a lightweight, precise, and efficient system. The Borewell Rescue System can navigate into the well and carry out tasks as instructed by the operator. The system is programmed to close its arms as soon as it gets close to the youngster, and it stops working as soon as it does so. With the help of its sensors, this device can also provide air close to the infant.Carefully keeping an eye on the kid using the system's control device and camera.

3. Block diagram

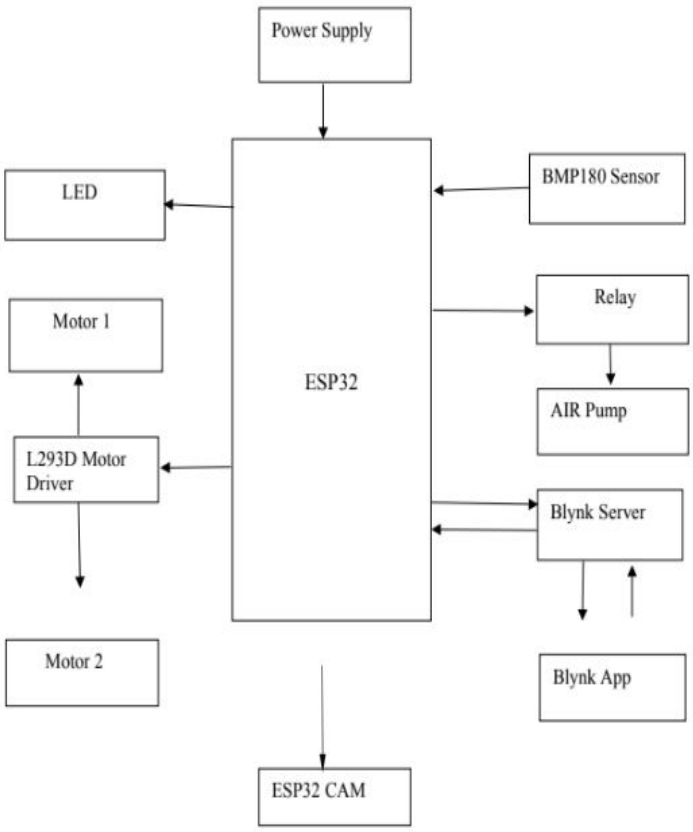
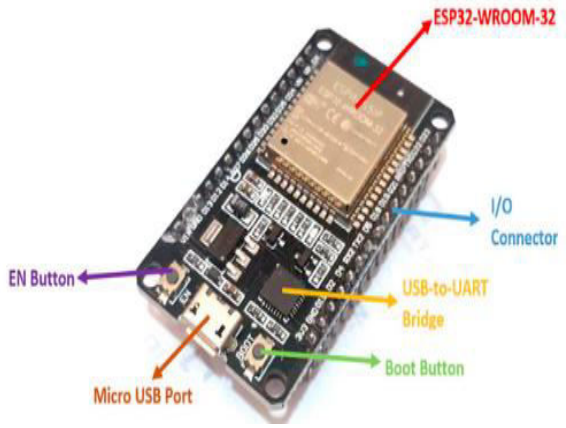


Fig 3.1 block diagram.

3.1 ESP WROOM32 Module

One popular Wi-Fi development board for Internet of Things (IoT) applications is the ESP32S, which has built-in Bluetooth Low Energy (BLE). The Espressif Systems ESP WROOM32 Module serves as the foundation for the Board. The tiny Module is ideal for portable battery-powered applications because to its low power consumption and ability to operate on 3.3V. It is secure, dependable, and expandable because to its 40nm low power TSMC technology and dual mode 2.4 GHz Wi-Fi. Using serial connectivity for

debugging is made easy by the board's CP2102 USB-UART bridge. If you have the Arduino IDE or the Lua Programming Environment, you may utilize the board. After the ESP 8266, there was the ESP32. Along with its Wi-Fi and Bluetooth features, it has a dual-core CPU. Because of its USB-to UART interface, the board is compatible with widely used development environments, such as the Arduino IDE, for easy programming. The Micro USB, 3.3V, and Vin pins may all be used to power it.



ESP 3.2 WROOM-32 Module

3.2 L293D Motor Drives

To move the robot's wheels, a motor is required. Embedded applications may take use of the L293D motor driver, which offers simple and intuitive user interfaces. The L293D motor driver is attached to a high-quality, one-sided, non-PTH printed circuit board. To facilitate access to the pin functionalities of the L293D motor driver IC, the IC's pins are attached to connectors. With a supply voltage of up to 24V, the L293D, a dual full bridge driver, can drive up to 1Amp per bridge. One or more DC motors, relays, solenoids, etc., can be driven by it. You may use it with any TTL sensor. If you want to make its current capacity 2 Amp, you may connect two L293D H bridges in parallel.

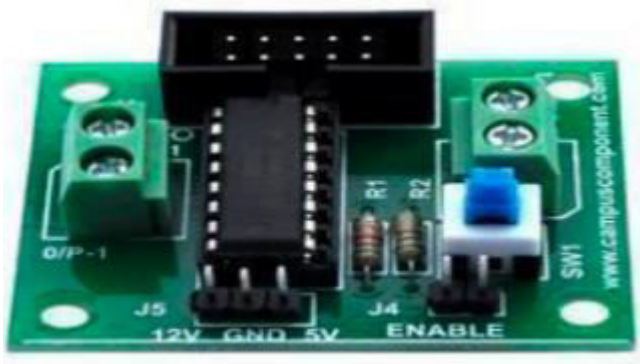


Figure 3.3 L293d Motor Driver

3.3 BMP180

When it comes to low-cost sensing solutions, this Bosch precision sensor for barometric pressure and temperature is your best bet. You may also use it as an altimeter because pressure changes with height! A 3.3V regulator, an I2C degree shifter, and pull-up resistors on the I2C pins are attached onto the PCB with the sensor. The BMP180, the successor of the BMP085, is Bosch's next-generation sensor. In terms of hardware and software, it is identical to the BMP085. This means that you may use our BMP085 tutorial and any sample code or libraries as a drop-in replacement. Since the BMP180 lacks an

actual XCLR pin, you may have to use the I2C bus to determine whether statistics are ready. An 3.3V regulator and an i2c level shifter circuit are integrated into this board, making it 5V compatible and allowing you to utilize this sensor competently with 5V power and good judgment. It's straightforward to use the sensor. Connect the VIN pin to the 5V voltage pin, GND to earth, SCL to I2C Clock (Analog five), and SDA to I2C facts (Analog four) if you're using an Arduino, for instance. Next, get our sample code and BMP085/BMP180 Arduino library to calculate altitude, strain, and temperature. execute the library's deployment and load the instance sketch. Accurate data on temperature, stress, and altitude will be at your fingertips without delay. Our unique. The tutorial contains all the necessary information, such as software application links and installation instructions. It offers more information about the BMP180 to help you identify the sensor correctly, such as how to accurately determine height using sea-level barometric pressure. 5V outfitted BMP180 barometric pressure, temperature, and altitude sensor.

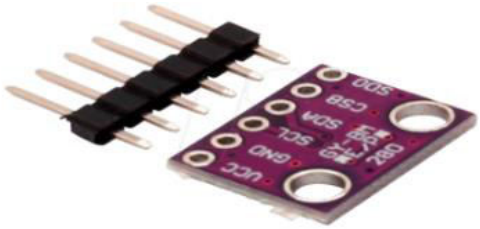


Fig:3.4-BMP180.

3.4 Relay

In electronics, relays are the most prevalent switching devices. Unlike transistors, which have a maximum current flow limit and can't switch AC loads, it can readily switch high current loads. Whether your load is AC or DC, this 5V 1A Relay Module can switch it. Electromagnetic switches are able to turn high-current circuits on and off by applying a tiny current to an internal coil. It may be immediately connected via the PCB screw connections. Electronic circuits can use them to turn appliances on and off, safety circuits can use them to connect or disconnect heavy loads in case of danger, and they have many automotive uses, such as powering the windshield wipers, fuel pump, cooling fan, and power windows.

Fig. 3.5 relay

3.5 ESP32-CAM

The OV2640 camera module with the original ESP32 CAM WiFi+Bluetooth module board make up the ESP32-CAM. Built on top of the ESP32 platform, this device also has the option to use a camera.

That implies you may use the OV2640 camera module as an add-on and still take advantage of the ESP32's features, such as WiFi and Bluetooth connection. Numerous Internet of Things (IoT) applications may now take use of this. It is a strong camera despite its diminutive size, and it requires very little in the way of system assistance to function. It comes in a ribbon cable arrangement. A 2.0 megapixel UXGA sensor powers the camera. The sensor's native resolution is 1600 by 1200. It works well with the majority of camera-based Internet of Things applications.

Fig: 3.6 ESP32 CAM

3.6 Grappler module

A robust 12V DC motor powers our new Mechanical Robotic Gripper Module, which faithfully mimics the complex opening and closing motion of a JAW. Improving the quality and adaptability of your robotics projects is the goal of this cutting-edge module. This gripper module is a must-have for any engineer, student, or enthusiast who wants to make their robotic arm or robot hand creations a reality.

Fig 3.7 Grappler.

4. Schematic Diagram

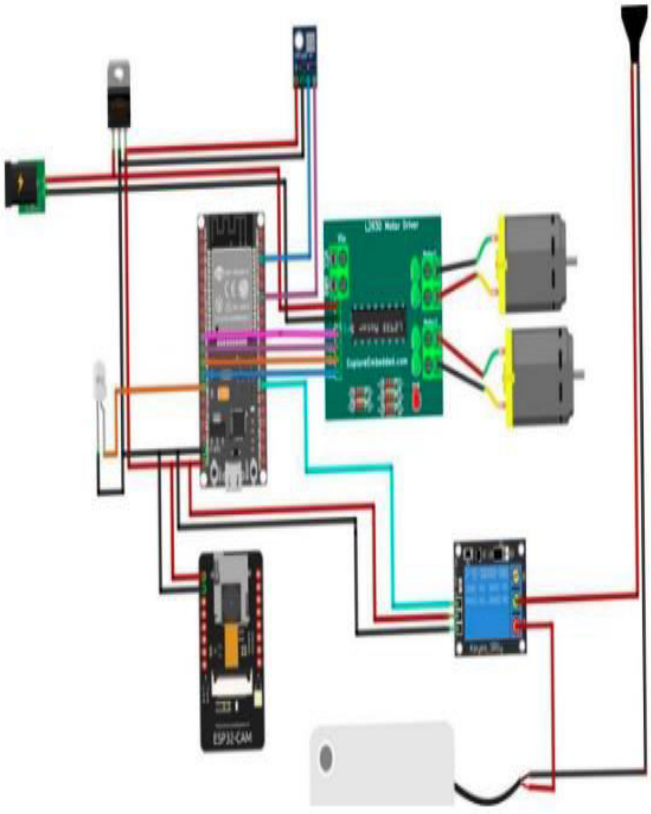


Fig 4.1 Schematic Diagram

5. Flow Chart Diagram

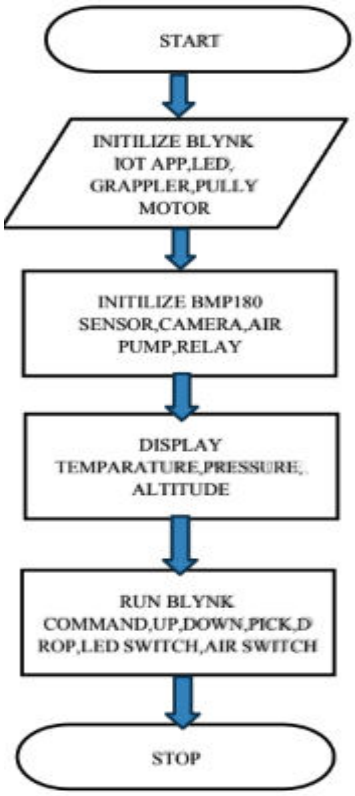


Fig.5.1 flow chart

6. RESULT AND DISCUSSION

When a kid Saver Machine is turned on, it will successfully retrieve a tiny person or kid who has fallen into a well or other restricted area. Usually, this apparatus is a harness or some other equipment that allows rescuers to descend into the well in a safe manner and recover the youngster. The end goal is the person's safe extraction, with their health and safety being the top priorities during the rescue mission.

Fig:6.1 Final Output

The ultimate goal of a Borewell Rescue Operation System is to free a person—typically a youngster—who has become stuck in a borewell or other small, deep hole in the earth. For a safe and effective rescue operation, this method requires specialized equipment and skilled personnel. Retrieving the person from the borewell while keeping them safe is the main objective of the rescue operation. In the end, it all comes down to rescuing the imprisoned person safely and successfully.

Fig:6.2-Robotic Grappler Lifting

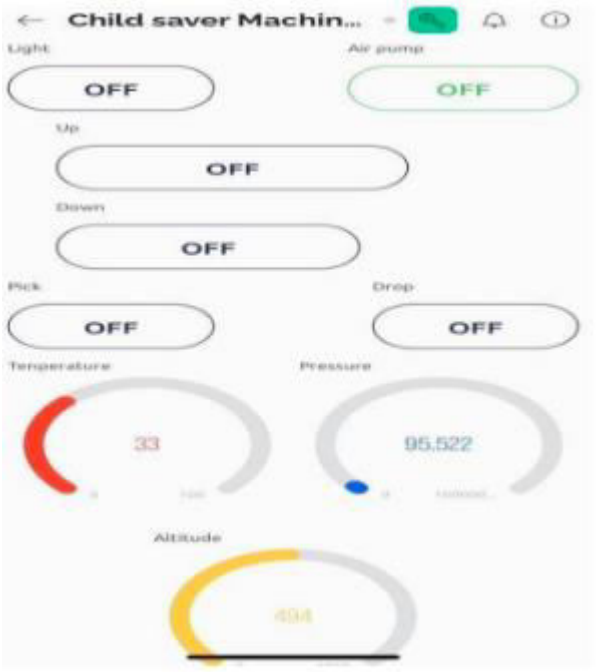


Fig:6.3 Measurements of Altitude, Temparature ,&Pressure.

7. CONCLUSION

Many lives might be spared if the "Smart and Safe child rescue system" could prevent youngsters from falling into bore wells. Because excavating a trench next to a bore well is an arduous and time-consuming task, several people have fallen into the well in the last decade, losing their lives. The project's execution is flawless since the right motors, arms, and cutting-edge technologies were used. It follows that the suggested method has the potential to save the lives of several children who may otherwise perish in future bore well accidents.

FUTURE SCOPE

Adding more features to this project in the future will allow it to be utilized in several applications. 1. Through the integration of smoke sensors into the robots, this system can gather data on the concentration of gases or smoke in specific areas. The sensors can identify toxic gases and relay this information to the microcontroller, which in turn relays it to the transceiver, allowing for data to be retrieved on the PC side. 2. Incorporating a gas sensor, which checks for the presence of any harmful gas in the bore hole, is an upcoming improvement to our project. Nonetheless, this might be accompanied with an oxygen test, which is used to provide oxygen to the child. 3. To enhance the time it takes to rescue someone from the bore hole, a hand gesture mechanism is used instead of the potentiometer.

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