SMART INDIA HACKATHON 2023
SIH

Basic Details of the Team and Problem Statement

- **Problem Statement By:** Ministry of Home Affairs

- **PS Code:** 1439
- **Problem Statement Title:** Robotic Device for Borewell Rescue System

- **Team Name:** The Eagle Eye
- **Team Leader Name:** Harsh Vardhana

- **Institute Code:** U-0840
- **Institute Name:** Indian Institute of Information Technology, Ranchi

- **Theme Name:** Disaster Management

THE EAGLE EYE
Aiming the Finest

TEAM NAME

PROBLEM

- India has over **27 million borewells**, of which several are dried up and no longer in use.

- In such a situation, usually, the pipe and the iron cast are removed, leaving behind an open hole. They are removed to show that the well is no longer useful.

- According to the National Disaster Response Force (**NDRF**), since 2009, over **40 children have died** after falling into borewells and over **70 % of rescue operations failed**.


IDEA / APPROACH DETAILS

We Created a ROBOTIC DEVICE who's function is to go inside the borewell and by using our various sensors and arms using servo motors, we intend to bring the child back to the surface.

We will be using a rope and pulley system to send the robot down the well.

By using our camera module we align our robot in desired position and further using the gripper we make a firm grip and raise the robot with chiled back to the surface.

Technology used : Servo Motors MG996R, Node Mcu ESP32, ESP32 CAM CAM, HC05, Basic Concepts of Mechanical Engg.
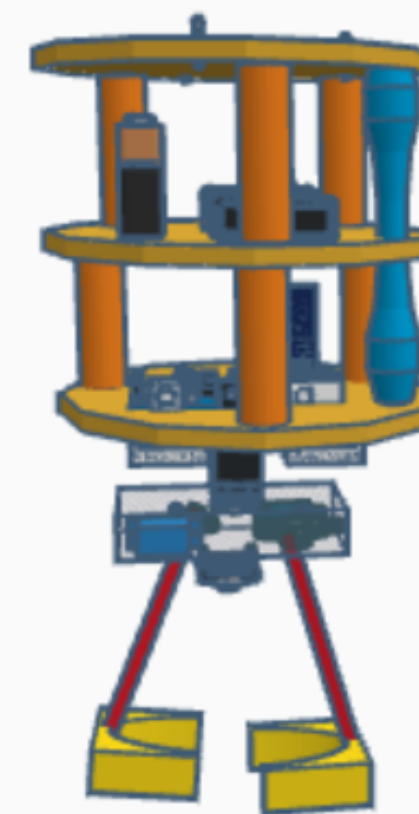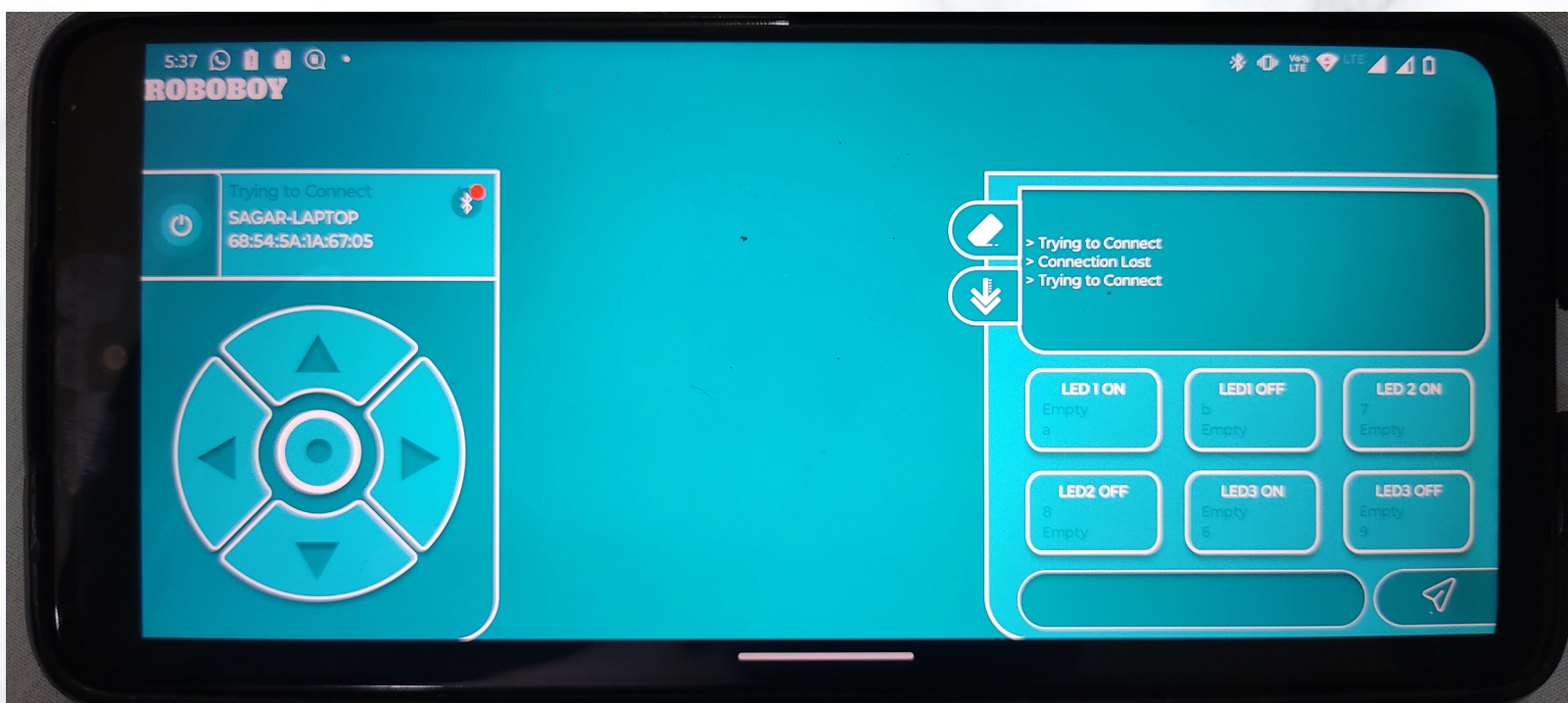


Virtual design

In process Robot

Show Stoppers

- Below a hard deck of 100 - 200ft the basic requirement for the child is **oxygen cylinder**. We installed an OXYGEN CYLINDER which flushes in the oxygen when it is sent down to relax the child.
- We have a two way communication device which enable us to communicate with the child, also the camera will provide the exact position/condition of the child.
- Extremely easy to use as the device will be operated via android
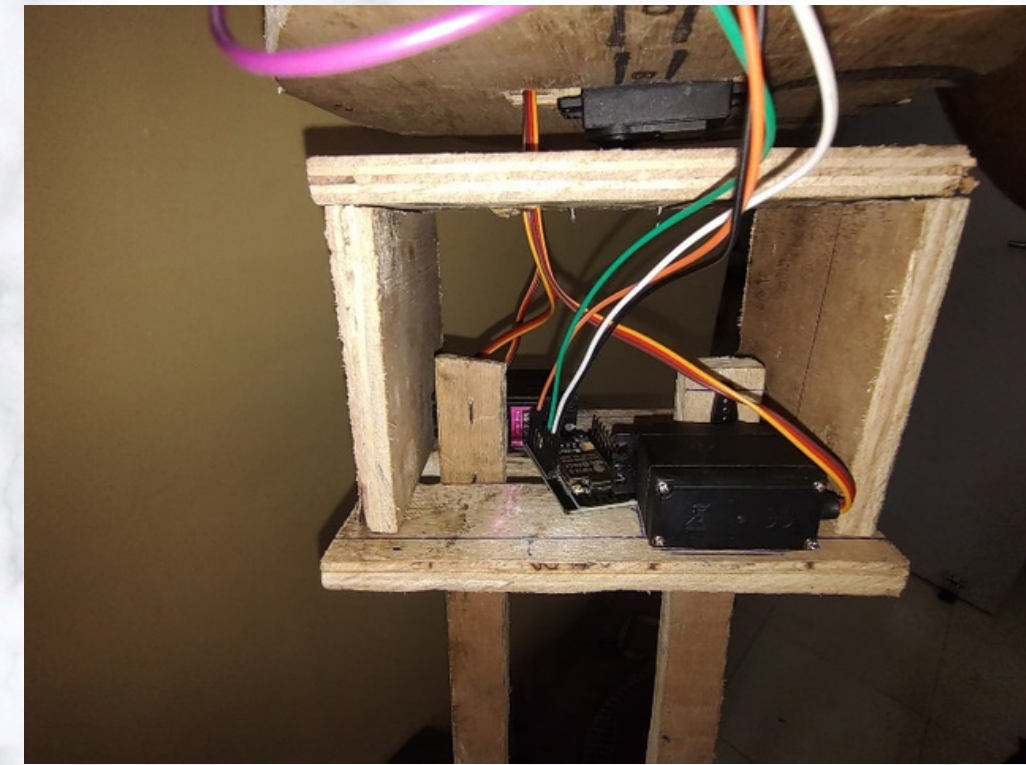
Camera module for enhanced position clarity

Android Controller

Use Cases

- The Robot will be operational on its weight limit, But we have can increase the limit by using suitable motors and grippers.
- This can also be used to pull up any small animal/pet rescue.
- Can further be modified in smaller scale for even smaller pipes like empty drain holes, or Industrial use cases.

Team members

COURSE: B.Tech
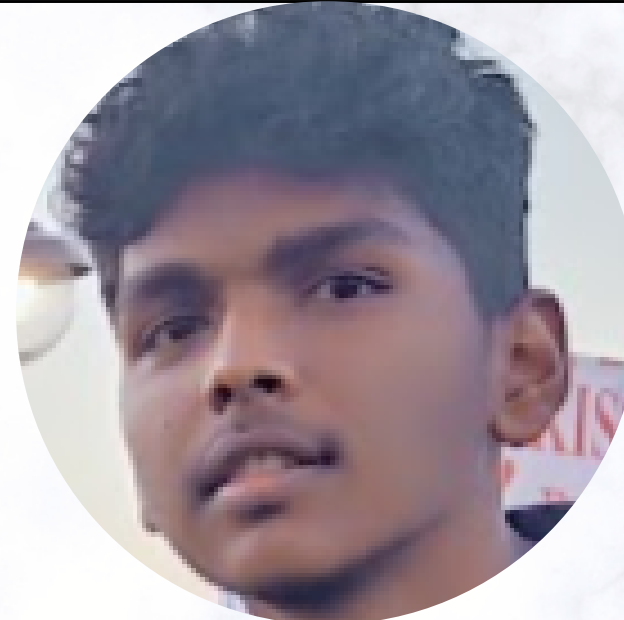NAME: HARSH VARDHANA
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