# CASCOV

Consultation And Sanitization for COVID-19


**Team-ZHCDJ**

**Harshit Sharma**

**Janhavi Singh**

**Vishnu Teja**

**Dhruv Shah**

**Herambh D**

# Discussion points

Key topics covered
in this presentation

- Problem Statement
- Objectives
- Overview of Tasks
- Bot Design
- Functions
- Features
- Total Cost
- Modifications

# Problem Statement

To minimize the exposure of healthcare workers to the Corona virus and prevent the spread of this virus through contact with infected surfaces, we propose CASCOV-a Consultation and Sanitization Bot.

# OBJECTIVES

Safety of healthcare workers who are putting their lives on the line to save the lives of others.

Low-cost robot to provide essential sanitization and consultation in the remotest hospitals.

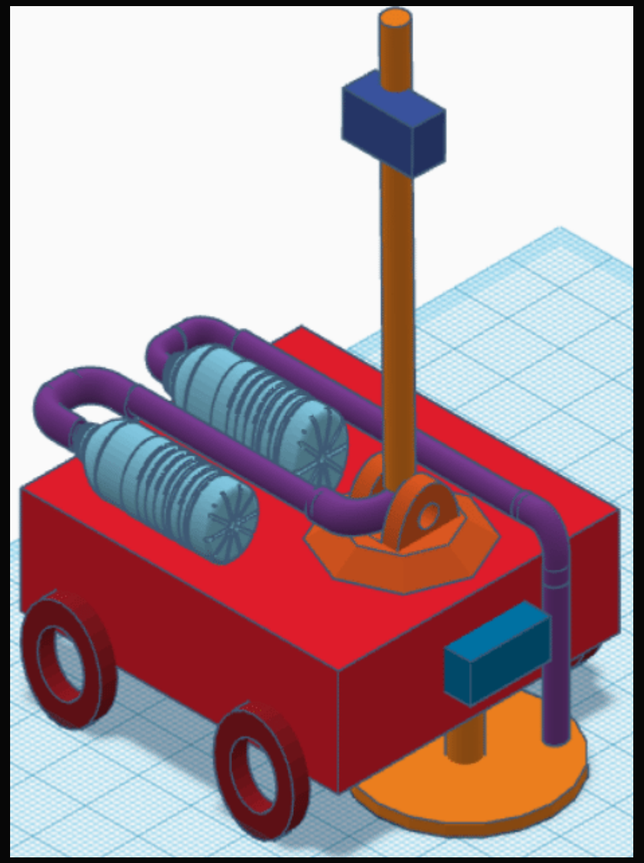
Time-efficient consultation with the medical staff so that the needs of each patient are met.

# Overview of Tasks

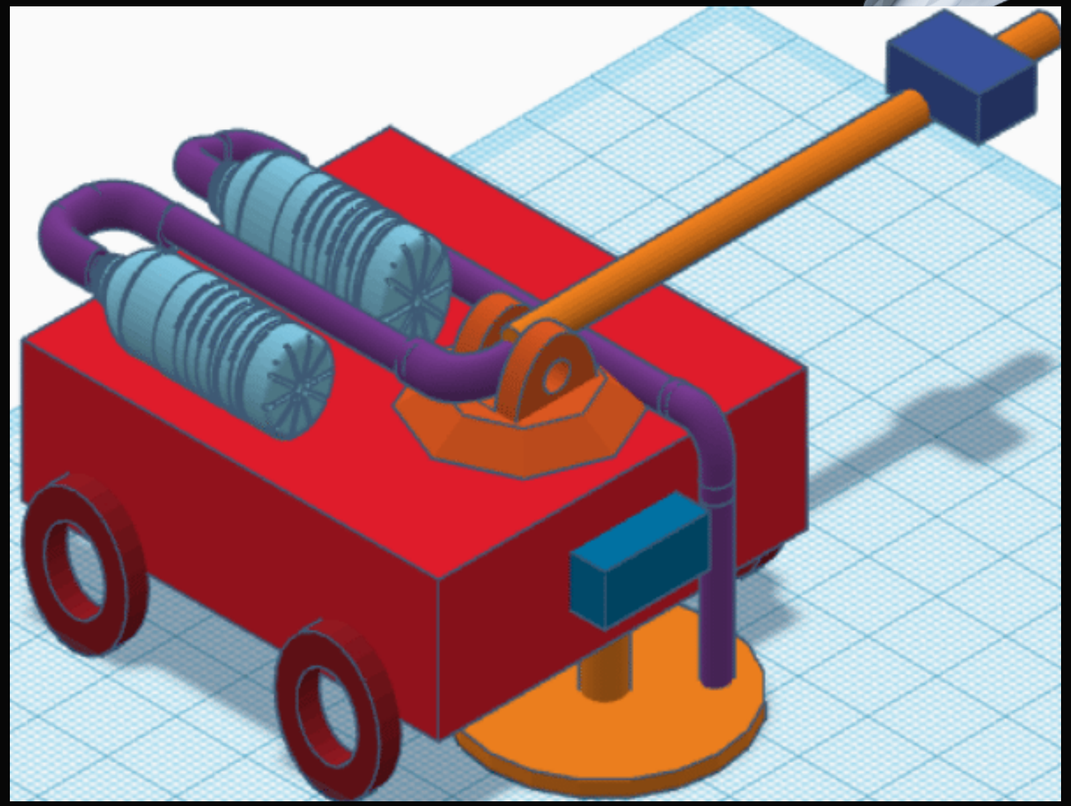
- Regular sanitization of COVID ward includes mopping the floor and spraying sanitizer on the surroundings' walls and objects.

- Arranging a call with the medical staff for the patients in need.

# BOT DESIGN



When spraying on wall



When spraying under the bed

# FUNCTIONS

1. MOTION

2. MOPPING

3. SANITIZATION

4. COMMUNICATION

# MOTION

- Follows the moving mechanism of a Line Follower Robot

- Ultrasound Sensor to prevent collisions makes the bot completely autonomous and enables it to move without supervision.

- The bot is able to perform different operations with the help of 5 Types of Floor Markings.

## SIMULATION

https://trinket.io/glowscript/cd442d6fbb

# MOPPING

- A circular acrylic sheet at the front of the bot with a motor scrubs the floor to clean more efficiently.

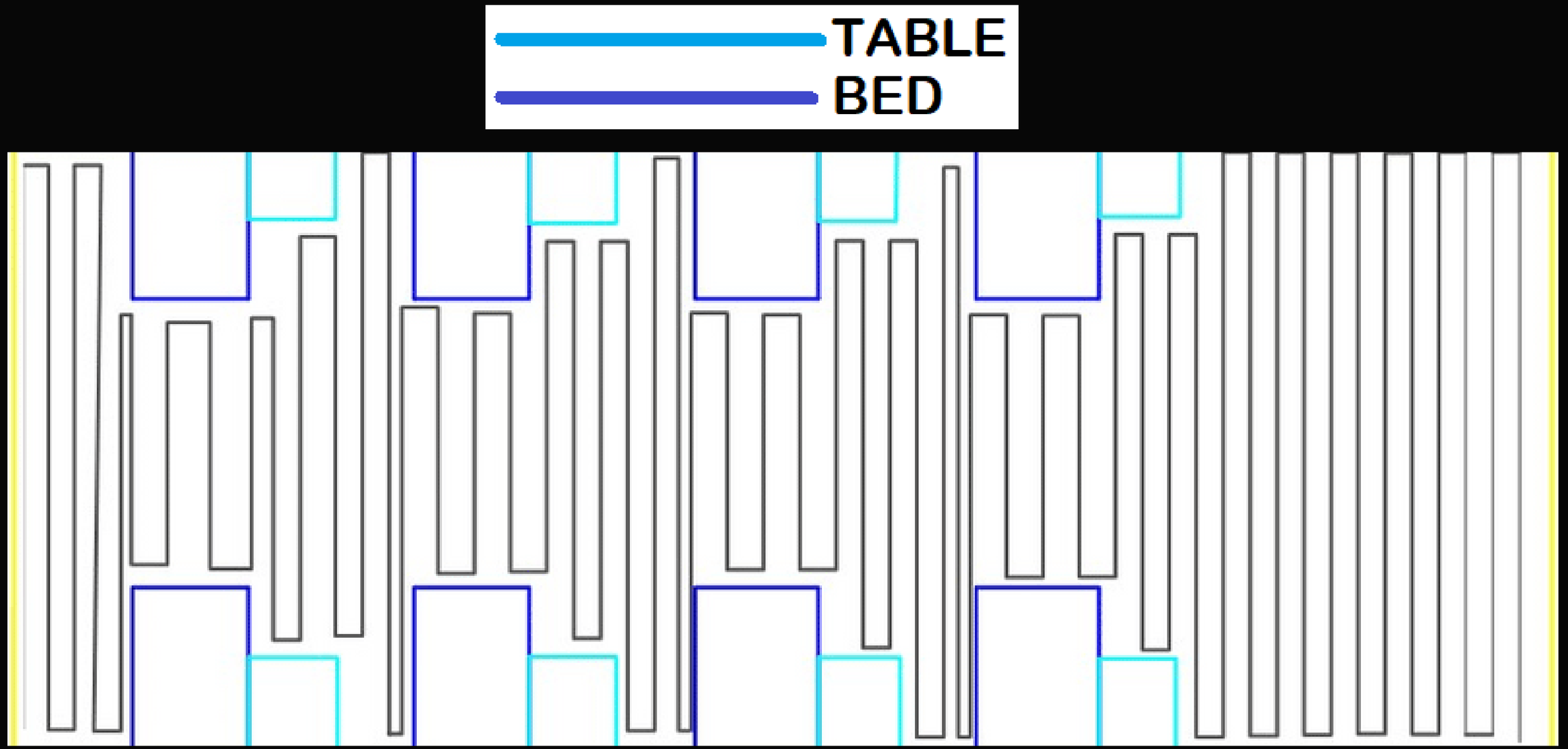
- The bottle with disinfectant liquid is attached to the surface of the bot with a few connecting tubes.

# SANITIZATION

- Spraying Mechanism is similar to a piston. An engine type of mechanism will be implemented to press the piston of the sprayer.

- The signal received at the markings decides the direction of rotation of the vertical arm such that the spraying occurs at the required surface.

# LAYOUT OF COVID WARD

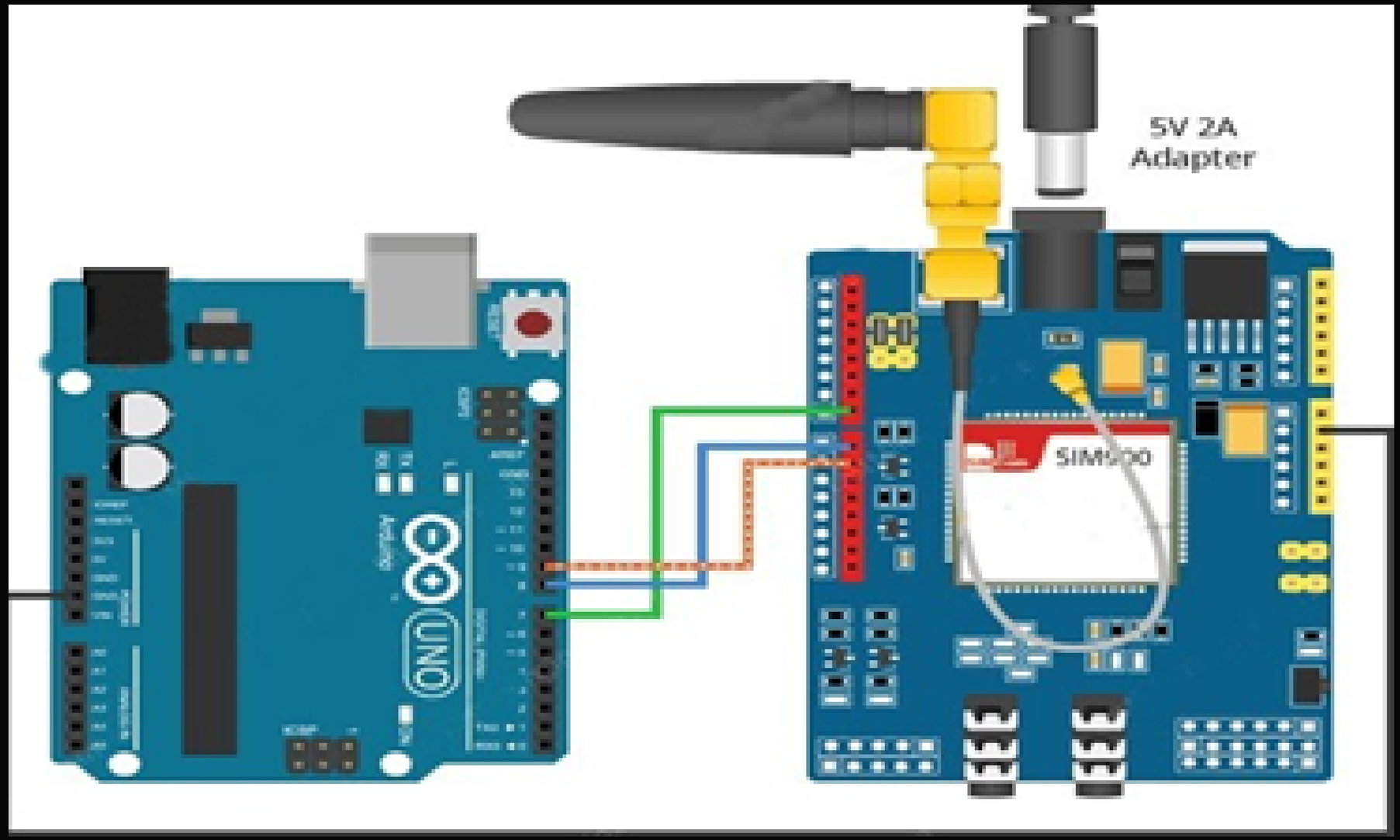


# COMMUNICATION

- Communication of the bot with the medical staff via voice call, a GSM Shield(SIM 900) is used with an external SIM Card connected with the Arduino UNO board. This is connected to an external speaker and a microphone circuit.

- A pushbutton feature will enable the patient to converse with the medical staff.

# COMMUNICATION



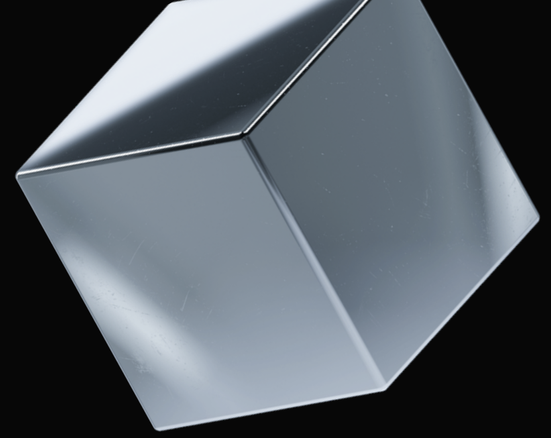
# SOFTWARE USED

- GSM module
- Arduino IDE
- AutoCAD
- TinkerCAD
- Glowscript
- MATLAB/Simulink
- Visual Python

# HARDWARE USED

- DC Motor
- Stepper Motor
- Arduino Mega
- Arduino UNO
- GSM Module
- Motor Driver
- Sponge
- Infrared sensor
- Sanitizer Bottle
- Graphite Rod
- Customized Chassis
- Wheels
- Wires
- LiPo Batteries
- Ultrasonic Sensor
- Microphone

# TOTAL COST



| Component Name | Amount | Cost per Piece (in Rs.) | Total |
|---|---|---|---|
| Simple DC Motor | 6 | 173 | 1038 |
| Stepper Motor | 2 | 1200 | 2400 |
| Graphite Rod | 1 | 345 | 345 |
| Arduino Mega | 1 | 1259 | 1259 |
| Arduino UNO | 1 | 789 | 789 |
| GSM Module | 1 | 850 | 850 |
| Sanitiser Bottle (1L each) | 2 | 225 | 450 |
| Motor Driver | 1 | 500 | 500 |
| Ultrasonic Sensor | 1 | 200 | 200 |
| Infrared Sensor | 4 | 200 | 800 |
| Lithium Ion Battery | 1 | 250 | 250 |
| Miscellaneous (wheels, chassis, welding etc.) | 1 | 1000 | 1000 |
| | | **Total** | **9881** |

# MODIFICATIONS

1. Replacing the sprayer with a UV wand
- Enables more efficient disinfection of surfaces and objects.
- This can be used in hospitals where UV wands are affordable to use.
- This will replace the mechanical work involved in the spraying process by a simple UV wand that can be switched on and off as per the need.

2. Hand Sanitizing Dispenser to spray sanitizer on the hands of those who want to sanitize their hands.

# Thank You!