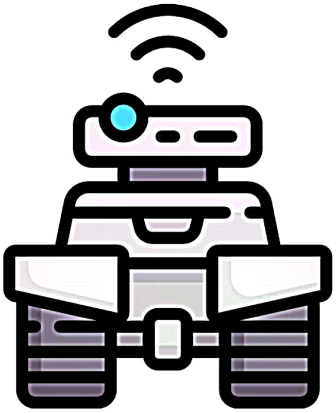
ELECTRONICS AND IOT PROBLEM STATEMENT

WebRover Challenge



You have to build a Rover, i.e. in other words a **4 wheeled bot** which is capable of movement and the movement is controlled through a web server. **Web Server** can be Local or Public.

Build a Website such that one can type commands and according to that command the Rover should perform different movements.

You have to make the bot **physically** or in **3D-simulation**.

BASE PROBLEM:

The Rover should do the following movements according to the following listed commands:

FORWARD: The Rover should travel a distance of 100cm forward and then stop.

BACKWARD: The Rover should travel a distance of 100cm forward and then stop.

RIGHT: The Rover should rotate clockwise 90° and then stop.

LEFT: The Rover should rotate anticlockwise 90° and then stop.

STOP: The Rover should stop instantaneously i.e. it should overwrite the current function and stop.

BONUS PROBLEM:

In addition to the base problem as stated above, the Rover should be able to do custom precise movements. Such as:

1 STEP = 10cm

FORWARD 5 STEPS: The Rover should travel a distance of 50cm forward and then stop.

BACKWARD 8 STEPS: The Rover should travel a distance of 80cm backward and then stop.

RIGHT 75°: The Rover should rotate clockwise 75° and then stop.

LEFT 120°: The Rover should rotate anticlockwise 120° and then stop.

PLACE FOR INNOVATIONS:

Participants are allowed to use innovative ideas over the base problem.

Innovations may include use of different **sensors** for Rover safety or designing a good web server with **feedback**, or designing a custom pcb etc. Optimizations taken to reach proper **accuracy**, power consumption etc.

CONSTRAINTS:

Dimension of the bot should be within:

Length: 30cm **Width:** 30cm **Height:** 10cm

Any **power** supply and any microcontroller or microprocessor board can be used.

Any **motor** can be used like BO motors or Stepper Motors or Geared Motors etc.

Response time (0.5sec) - Response time is the time between the command sent from the web and the corresponding movement performed by the Rover.

RULES:

You have to make the bot physically or in 3D-simulation.

Participants will be scored according to:

Base Problem (0-100 points)

Bonus Problem (0-50 points)

Innovations (0-50 points)

Submit a report which should contain the followings:

You have to make the bot physically or in 3D-simulation.

1. Full description such as, model design, hardware and software working, electronics used, circuit schematics, power management, etc.
2. Optimizations taken to reach proper accuracy, power consumption.
3. Model limitations and places for further improvement.

Participants also have to submit working videos of their model if made physically or in simulations.