ROBOT BUG

TEAM
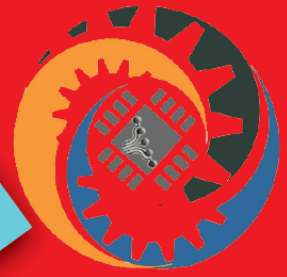
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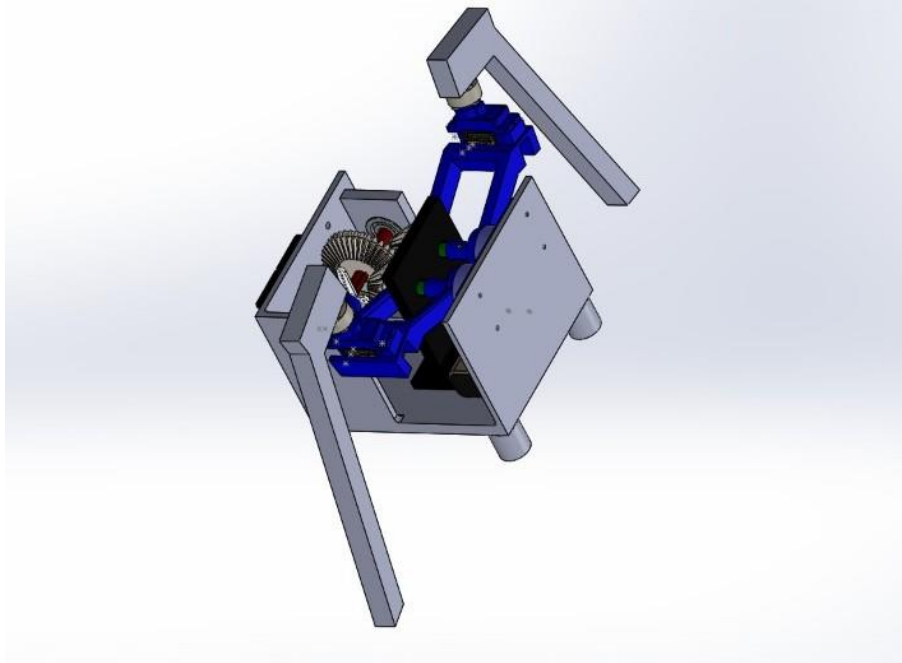
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Abstract:

Aim of the project is to make a robot bug that can be used to collection information from places that are inaccessible for humans

Motivation:

We have been hearing of robots being used mainly in factories for automating time-consuming processes and how they have radically changed the way work is being done. In the current times, the focus is on how the use of robotics outside the factory can change our lives over the coming decades. This is not just limited to easing out the day to day tasks but also includes the use of robots for more complex tasks.

Mechanical Aspects of Design:

1) 3 servo motors have been used for the project. The function of the servo motor placed along the side face of bug's body rotates the bevel gears which is turn raise the arm up
2) Once the arms are raised, the 2 servo motors being attached on the arms(1 on each) then moves the arms forward.
3) Hence first the arms are raised, then they move forward, touch down and then bot moves forward
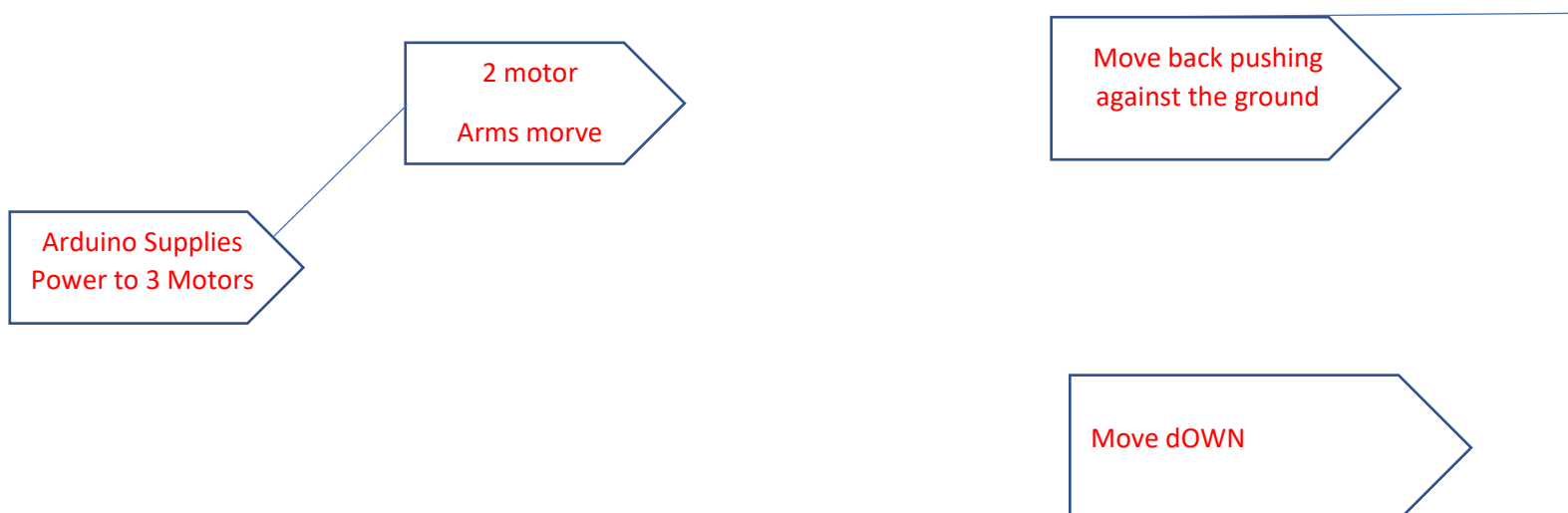4) A castor wheel is also attached so that the bot can move smoothly without any restrictions due to friction.

Electronic Aspects of Design:

1) Arduino has been attached to the body which controls the servo motors' performance like angle of rotation and speed etc.
2) The speed and the angles have been optimized as per the design and weight of the bug
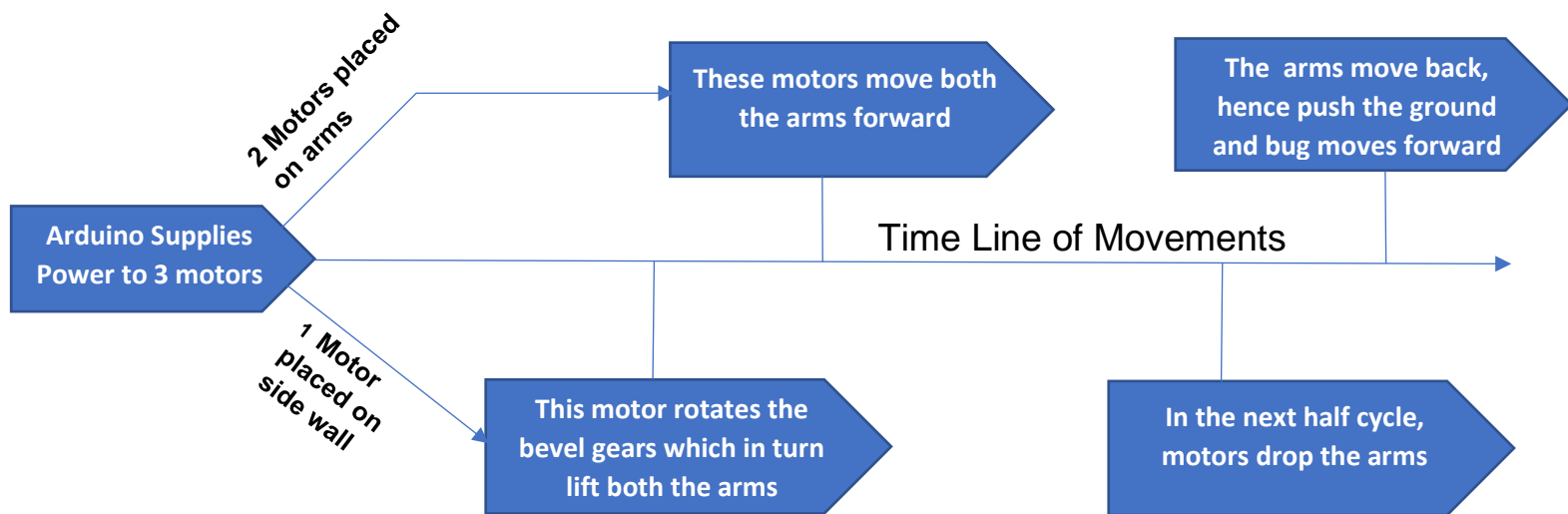3) A rechargeable 11V battery has also been connected to Arduino for power supply

Application:

1) Making surveillance of any disaster-affected area where human beings can't go.
2) Some areas need to be placed under video surveillance for a short time only, and therefore equipping them with stationary CCTV systems is not viable. Such challenges often arise in agricultural settings. For example, the fields might only need to be placed under video surveillance when the crops are reaching maturity. Surveillance of pastures is advantageous only while cattle are roaming around them.
3) Can be used in industries to detect parts of the machinery that are faulted.

Time Line of Functioning

2 motor

Arms morve

Move back pushing against the ground

Arduino Supplies Power to 3 Motors

Move dOWN

Flow Chart Explaining the functioning of Robot Bog

Arduino Supplies Power to 3 motors

2 Motors placed on arms

1 Motor placed on side wall

These motors move both the arms forward

This motor rotates the bevel gears which in turn lift both the arms

Time Line of Movements

The arms move back, hence push the ground and bug moves forward

In the next half cycle, motors drop the arms

References

1. https://grabcad.com/
2. https://stackoverflow.com/
3. https://www.arduino.cc/en/Tutorial/HomePage?from=Main.Tutorials