ALFA L8 BOT

(Rescue Robot Report)

By

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ABSTRACT

When there's a crisis like a building collapse due to an earthquake, rescue teams need help to find and rescue people trapped under debris. So, they're thinking of using special robots to help them. ALFA L EIGHT BOT (Alfa L8) robot can move around in the unstable area, find where people are trapped, and even tell the rescuers where they are.

INTRODUCTION

On 6 Feb 2023, a large earthquake struck South Turkey near the northern border of Syria, resulting in a partial collapse of a building in a densely populated area. The incident has led to several residents being trapped under debris, posing a significant challenge to rescue operations. In simple terms, when there's a crisis, rescue teams need help to find and rescue people trapped under debris. So, they're thinking of using special robots to help them. ALFA L EIGHT BOT can move around in unstable areas, find where people are trapped, and even tell the rescuers where they are and their exact location. This way, the rescue teams can work more effectively and save more lives.

DESIGN

- Alfa L8 (head)

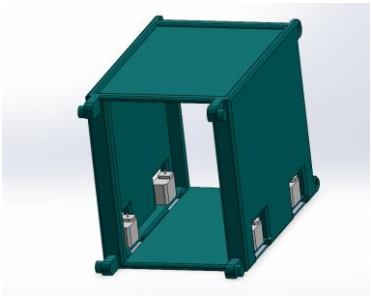
  Alfa's head is inspired by BOSTON DYNAMIC SPOT MIN and this is first part of robot. In this, there is a camera in the center of the head form which, we can drive the robot and take a view of the surroundings of a robot. On both sides of the head, seven LEDs are used for situations where light is needed to view the area around the robot and there is a speaker and microphone at the bottom form where you can give instructions and receive information.

Head

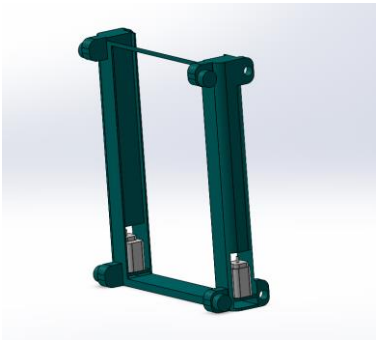
- Alfa L8 (Main body)

  The Alfa L8 robot is made up of different parts, with one of them being the main body. This body has four white-colored motors that are responsible for the linear movement of the legs. There is enough space in the main body to install various sensors, such as ultrasonic and vibration sensors, GPS for precise location tracking, motor drivers, and more. Additionally, you can equip the robot with a jack in the middle of the body to lift any debris that might get trapped underneath it. The main body is connected to the head and sub-body.

Main Body



Sub Body



- Alfa L8 (Sub Body) and (END Body)

  The sub-body is the third part of the Alfa L8 robot. It has two motors and is hollow inside, designed to carry items. You can attach multiple sub-bodies (with no limitation) together to increase the length of the robot. The end body is the fourth part of the robot and is used at the end of the robot to indicate its end. It has two motors inside it and is also hollow, designed to carry items.

  It is mandatory to attach the sub-body and end body together to get enough space to carry items.

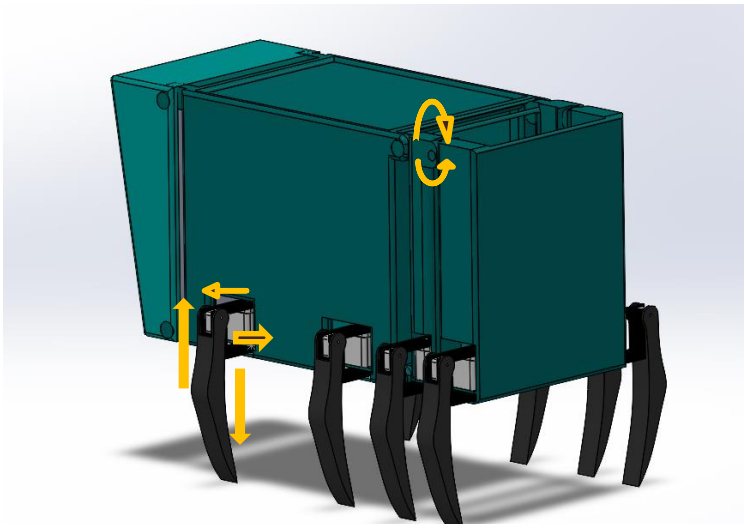
  Sub Body is attached with Main body and End body.

End Body

- Alfa L8 (link and Leg)

The purpose of links in a robot is to provide linear motion in a forward or backward direction. These links are connected to the shaft of a motor, and there is another motor within the link that provides motion to the leg.
This, in turn, produces an upward and downward linear motion of the leg.
This help robot to walk on unstable terrain and able to climb up the stairs.

Rotation and linear Motion



:- linear motion

:- rotary motion

LINK

LEG