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Autonomous Emergency Vehicle Design and Patient Carrying element Model.

**Introduction:**

The patient carrying model will be an extension of the ELEGOO smart robot. The design is a box that will be placed on top of the battery of the car. It has two clamps connected to the sides of the box and the battery of the car to ensure that the box will not move as the car travels towards its destination. The design of the ELEGOO smart robot car will resemble an ambulance.

**Patient Carrying Element design:**

Diagram

Description automatically generated

*Figure 1: A rough sketch and general idea of the dimensions of egg holder box.*

*Figure 1* provides a general idea of the shape and design of the box that the egg will be inside of. The egg holder will be a rectangular box with the dimension of length, width, and height to be 8.5 +- 1 cm, 6.0 +- 1 cm, and 3.5 +- 1cm respectfully. The material of the box will be plywood. As mentioned in the introduction, the box will be placed on top of the battery of the ELEGOO smart robot car.

Other iterations of this design are that the box is held on by clamps and wire mesh on top of the box shown in *Figure 2*. The fasteners used here have a semicircle top that allows easy adjustments on how tight it can hold the box on top of the battery. This, in theory, should help secure the box and egg in place as the vehicle travels up inclined surfaces, for example the ramp onto a model drawbridge.

Diagram, engineering drawing

Description automatically generated

*Figure 2 A rough sketch of the clamps that will hold the box on to the battery for it to ensure its position. It also has an add on wire mesh to hold the egg if it were to go up a ramp.*

Despite the plain design of this apparatus, it may pose few difficulties in its construction. For example, the clamp and the support that hold the clamps will need to be created using additive manufacturing methods, which may be a challenge to construct. The wire mesh at the top of the box is another challenge, as it is difficult to manipulate without proper equipment.

**Autonomous Emergency Vehicle design:**

As mentioned in the introduction, the design of the vehicle will resemble an ambulance.

Diagram, engineering drawing

Description automatically generated

*Figure 3: This is a rough sketch of the overall ELEGOO smart car design to resemble as an ambulance.*

*Figure 3* shows the overall design of the Autonomous Emergency Vehicle design with patient carrying element. There are only two materials used for the exterior design of the car: paper and cardboard. Paper is used in between the top plate and the bottom plate of the car to cover up the motors while carboard is used to cover everything on the top plate. The camera and ultrasonic sensor are not covered because they are needed for the car to function properly.