NIMBUS build-a-bot

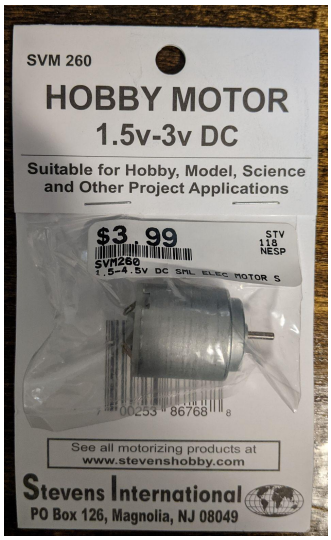
Introduction

Welcome to the NIMBUS build-a-bot lesson! At the NIMBUS Lab, we apply the scientific process to advance the capabilities of robots. We've explored swarm robotics, built drones that can dig, and even built a fireball dropping drone used to fight wildfires! In this lesson, we are going to show you how to create your own robot.

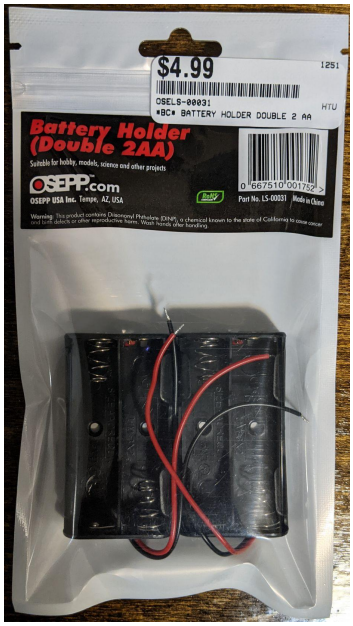
Bill of Materials

The first step to creating your own robot is to identify the parts and tools that you need to build your robot. For the robot that we are going to build today, we will use the following equipment:

1. DC Motor (1x)



2. Battery Holder (1x)



3. AA Batteries (2x)
4. Pink Eraser (1x)

5. Brush (1x)

6. Electrical Tape (Optional, but recommended)

7. Hot Glue Gun

You can get the electrical parts from the following links or from your local hobby store. In our case, we purchased the electrical parts from HobbyTown USA. The erasers and brush were purchased from Target.

1. DC Motor
2. Battery Holder
3. Electrical Tape

You can also purchase the following kit which may be cheaper and will provide spare parts for future projects.

1. Full Kit

Building Your Robot

Using the parts and tools that we have collected, we will now build a bristle bot. This robot uses vibration to move. Follow the steps below to build your robot. The lesson's video also provides a tutorial on how to build the robot.

1. First, we will wire the battery holder to the motor. Make sure that the batteries are NOT in the battery holder when you wire the motor to the holder.
    a. Connect the red wire to the positive (+) motor lead
    b. Connect the black wire to the negative (-) motor lead
    c. If you have electrical tape, wrap a piece of tape around the motor leads to cover up the exposed wires and to keep them from falling off.
2. Next, glue the motor and the battery connector to the top of the brush using the hot glue gun.
3. We will now put the eraser onto the end of the motor. The motor will spin the eraser in a circle, making the brush vibrate. We will stick the motor closer to one of the ends of the eraser so that it is off-centered. You can use hot glue to help hold the eraser onto the motor.
4. Finally, put the batteries into the battery holder, turn the battery holder switch on, and watch your robot move!

Your Challenge

Now that you have learned how to make a robot, we challenge you to design your own robot! Using the parts that you have collected for this project, you can create many different types of new robots like a self-propelled car!