

Robotics Projects at Home

by Blake Hament

Hands-On

You might not have spare motors or circuits at home... but that doesn't mean you can't start building a robot!

<https://www.instructables.com/id/DIY-Cardboard-Robot/>

<https://makezine.com/projects/cereal-box-robot/>

Use these links for ideas, but then try your own ideas and customize the design to make it your own!

What do you want your robot to be able to do?

Does your robot look fun or scary?

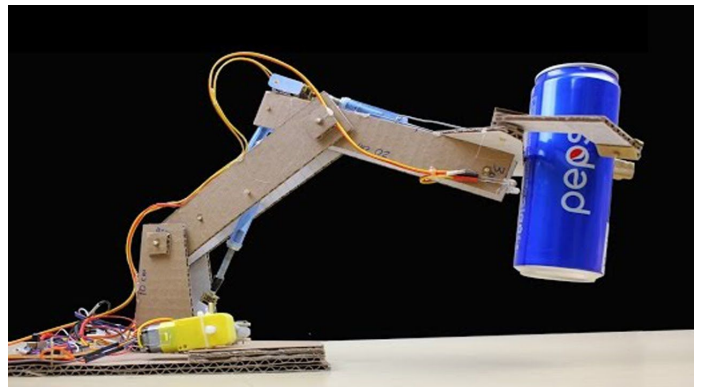
Can you change parts of your design to make people feel different emotions?



If you want to add motors to your robot, maybe you can find an old toy or device that can be scrapped for parts. Even a small motor can be used to make simple robots that move. Check out the "bristlebot", a robot that races around the floor using just a brush head, coin cell battery, and a small vibration motor.

<https://www.sciencebuddies.org/stem-activities/toothbrush-bristlebot>

When removing a motor from an old toy or device, **make sure to unplug any batteries or wall power** before getting to work. It's ok to cut wires, but make sure to leave at least the (+) red wire and (-) black wire attached to the motor. For most simple motors from small toys and devices, you should see motion after attaching the red and black wires to the positive and negative ports on a 9V battery. For small motors, smaller batteries like 3V coin cells may also be able to power the motor.



Use tape and/or hot glue to attach wire and cardboard to your motor. You would be surprised what you can make just with these simple materials! <https://www.youtube.com/watch?v=kLvlf9kiry>

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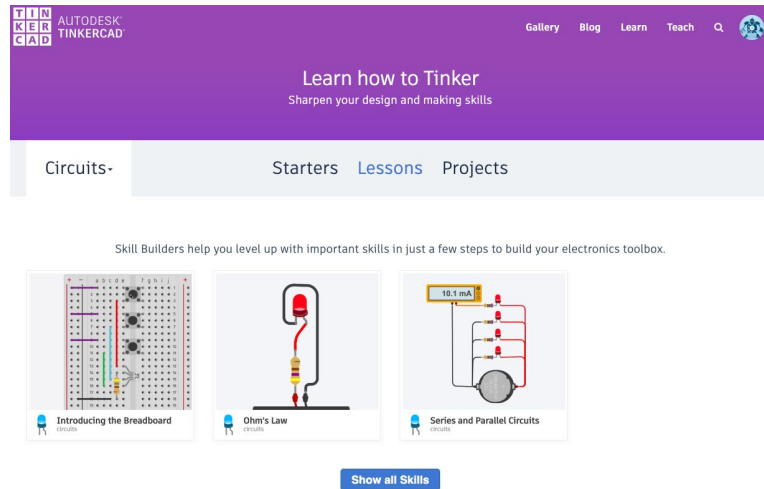
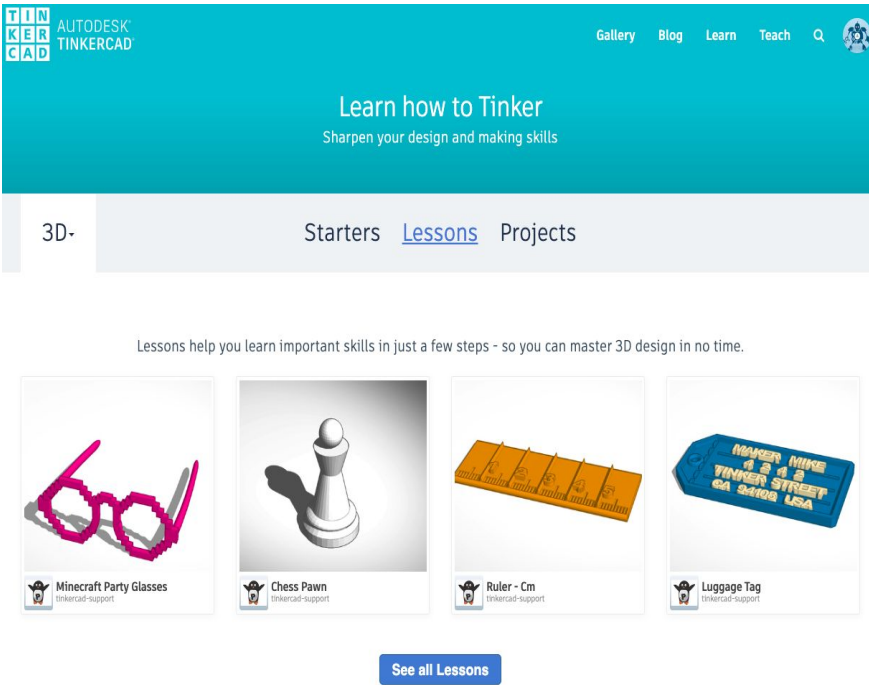
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Online

Even though you may be stuck at home, you can still do a ton of design and prototyping from your phone, tablet, or computer!

My favorite website for getting started is **TINKERCAD.COM**. CAD stands for Computer Aided Design. Instead of drawing our designs with pencil and paper, we can draw them digitally. The digital design can then be sent to a 3D printer, imported into a video game, or tested in a simulation.

TinkerCAD has great project ideas and tutorial lessons under the “LEARN” tab to get you started. It takes a little while to get used to the controls, but if you keep with it you will be making your own 3D designs in no time! **Did I mention it's free?!**



Maybe you're excited about learning **Arduino** and using that to add motors, sensors, and intelligence to your robot. TinkerCAD also has an awesome “Circuits” playground that includes Arduino and a ton of common motors, sensors, LEDs, batteries, and much more.

You can even pull up an Arduino sketchbook from within the **Circuits Playground** to start writing code for your Arduino.

If you are new to code, I recommend heading over to **SCRATCH.MIT.EDU**. Click “Start Creating” to launch the first tutorial.

The best way to learn is to check out projects other people have posted. If you like the game/video/or other program they made, click “remix” to copy their code into your own project, then you can play with it and edit for your own purposes.

