



Invention Project®



RC ORIGAMI BOT



Innovation Exploration Kit™, Invention Project® Series

Read prior to using the product.

SAFETY & HYGIENE



Warning: Choking hazard—small parts.
Not for children under 3 years.

- Activities require adult supervision.
- Ages 10+.
- Read and follow all instructions.
- Only use screwdrivers with an adult present.
- When using screwdrivers, safety glasses should be worn at all times.
- For safety and hygiene purposes, please wash your hands after each activity.
- Do not put materials in or near anyone's eyes, mouths, and ears.
- If anyone has an allergy, remove any materials that may trigger an allergic reaction for them.
- Do not play with or place plastic bags near the face or mouth.
- Ventilate the room when using markers.
- The RC Origami Bot complies with Part 15 of the FCC Rules.
- Insert batteries with the correct polarity.
- Remove the batteries during long periods of non-use. Always remove exhausted batteries. Battery leakage and corrosion can cause damage.
- Never short-circuit the battery terminals.
- Do not mix old and new batteries. Do not mix different types of batteries: alkaline, standard (carbon-zinc), or rechargeable (nickel cadmium).
- Dispose of batteries safely. Do not dispose of batteries in fire. The batteries may explode or leak.

Use this password to access your
RC Origami Bot experience:

robot



For an enhanced experience, MUSIC
AND VIDEOS can be found online at
invent.org/Invention-Project/Origami-Bot

BUILD AND OPERATE AN RC ORIGAMI BOT

Construct and operate your own Remote-Controlled Origami Bot!

Transform your Bot from 2D to 3D! Explore the possibilities of remote control technology, such as the use of medical robots that enable doctors to interact with and treat patients in different locations.

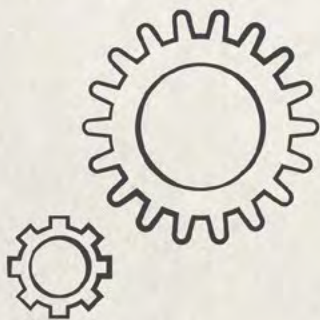


MATERIALS

AA batteries | Black permanent marker | Markers | Masking tape |
RC Origami Bot Kit | Safety glasses | Scissors | Screwdriver | Transparent tape

BUILD YOUR BOT

The RC Origami Bot is a build-it-yourself kit for making a simple radio-controlled robot! The robot can be controlled wirelessly and can do stunts, like a super-tornado spin!



IF POSSIBLE, PLAY THE HANGOUT MUSIC or play one of your favorite songs while you are building your RC Origami Bot.



- 1.** Check out your **RC Origami Bot Kit**. Open it up and lay out the pieces in a spot where they won't get lost.
- 2.** Put on your safety glasses. Find the transparent tape, a roll of masking tape, a pair of scissors, a permanent marker, and 5 AA batteries.

3.

Now, let's build that robot!
You can follow along with the
images on the next pages, or
check out **the video tutorial**.

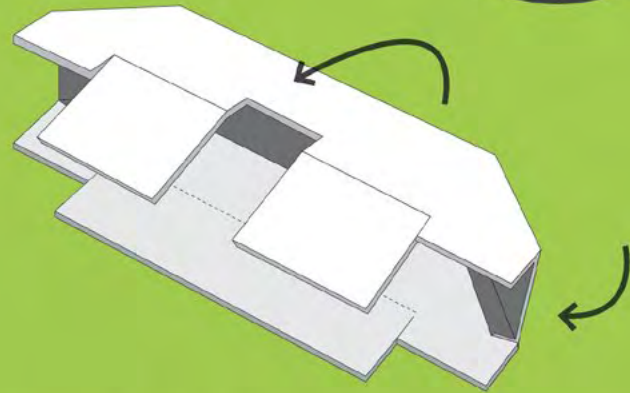
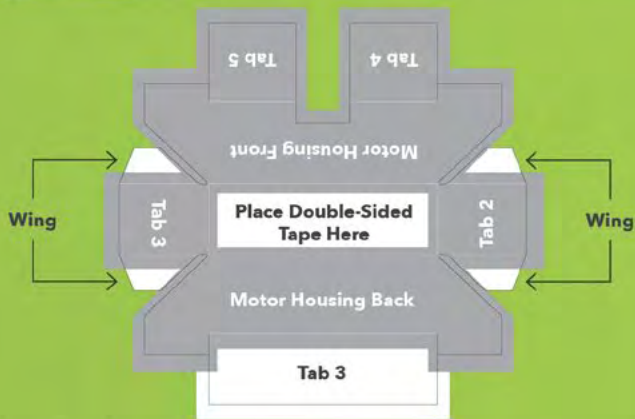


LET'S BUILD!

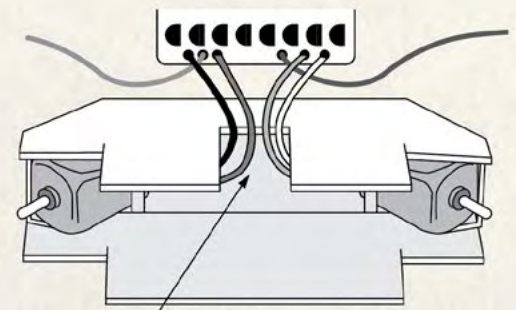
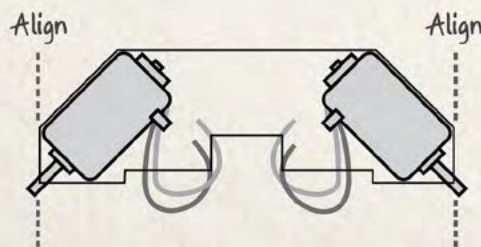
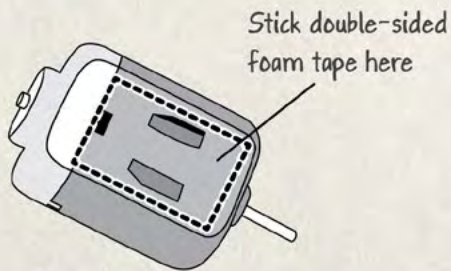
You may have to review each step a few times. Be patient with yourself. Don't give up!
If you get frustrated, try taking a break and coming back to it.

1. Assemble the motor housing.

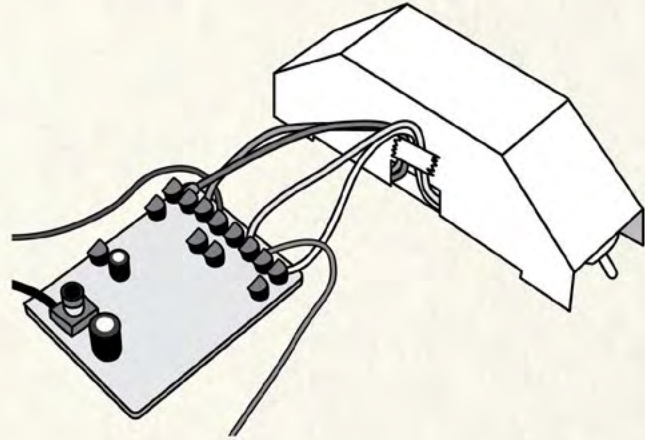
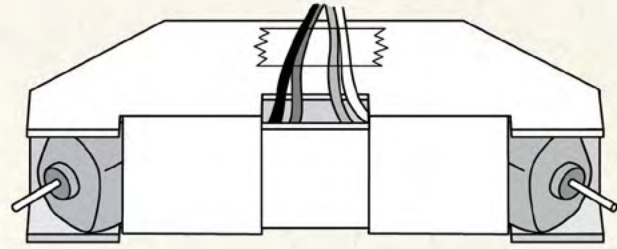
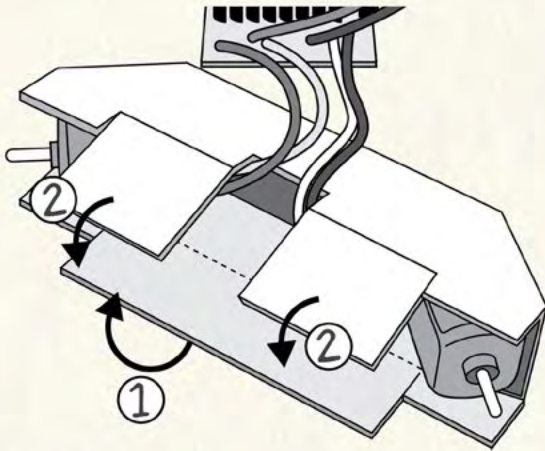
Handle
fragile
electronic
wires with
care.



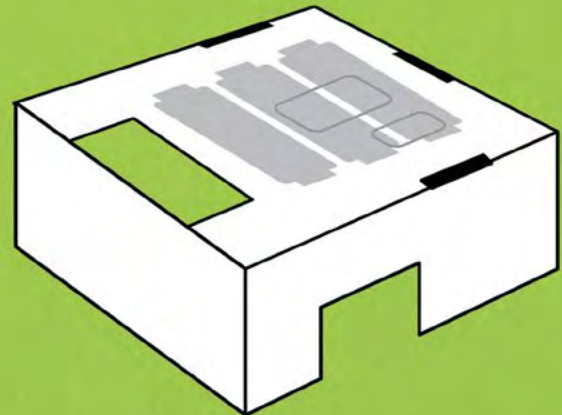
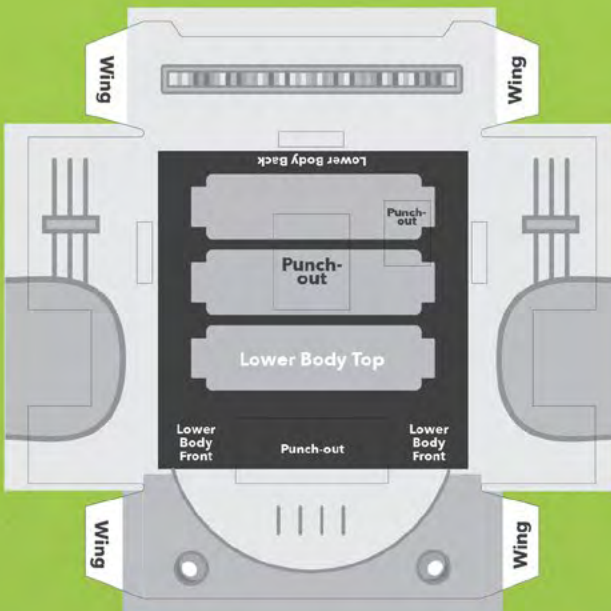
2. Attach the motors.



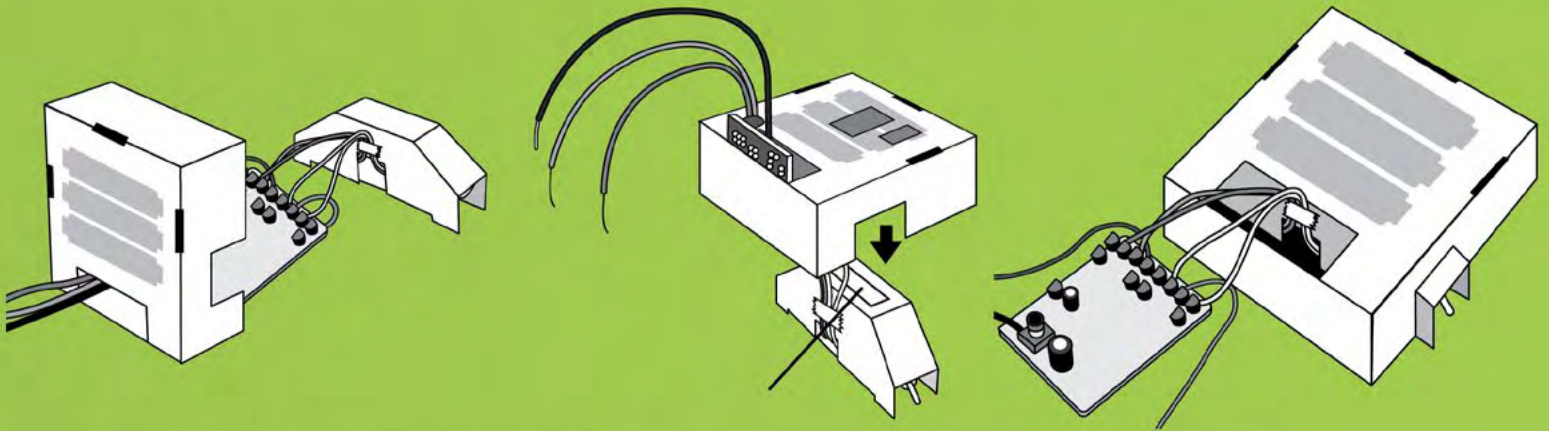
3. Finish the motor housing.



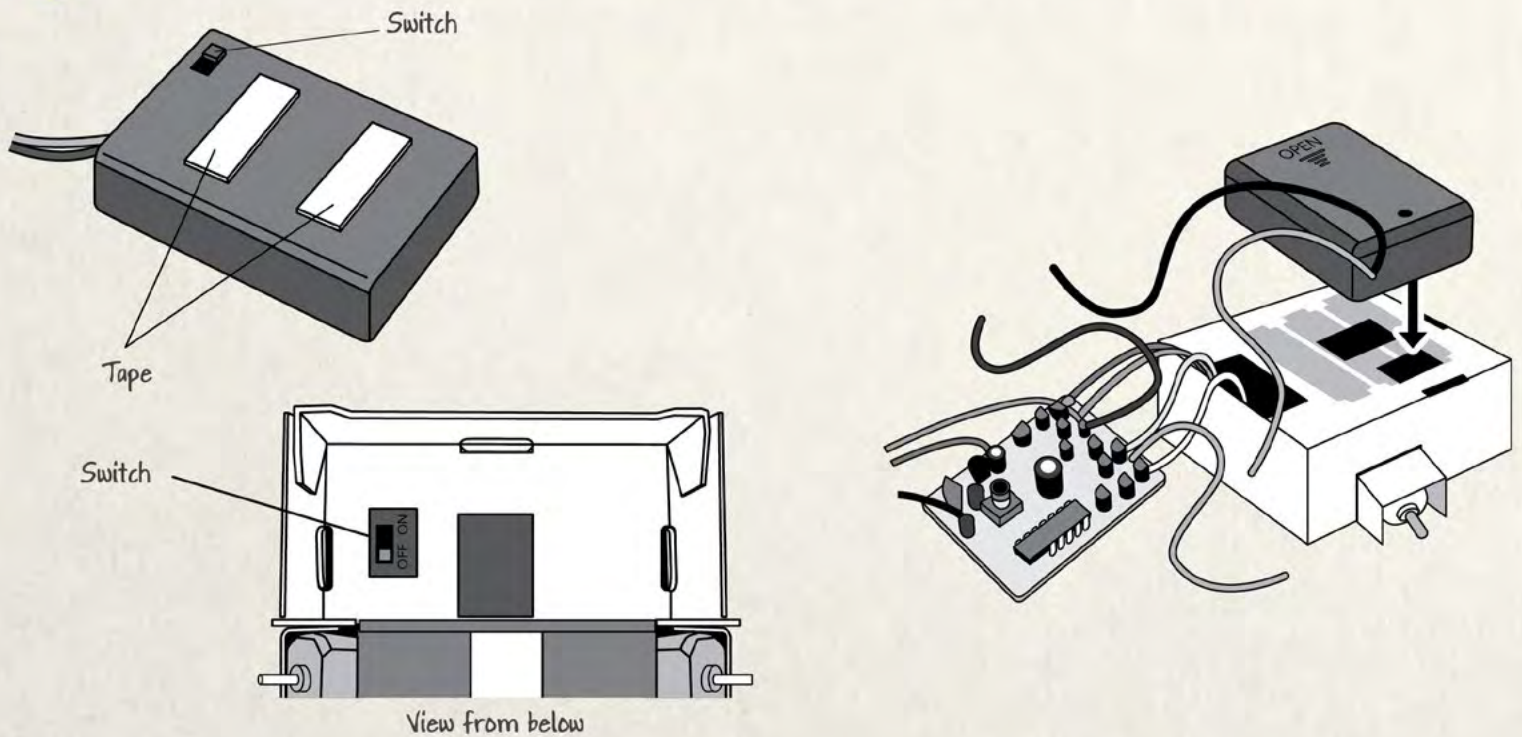
4. Assemble the lower body.



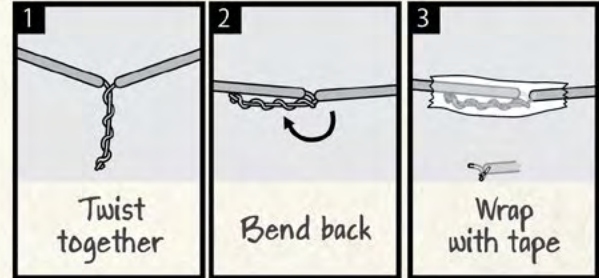
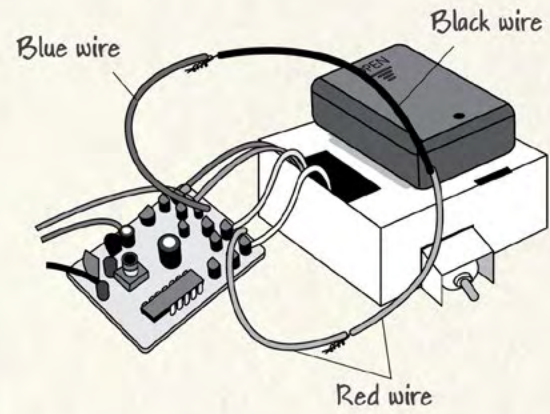
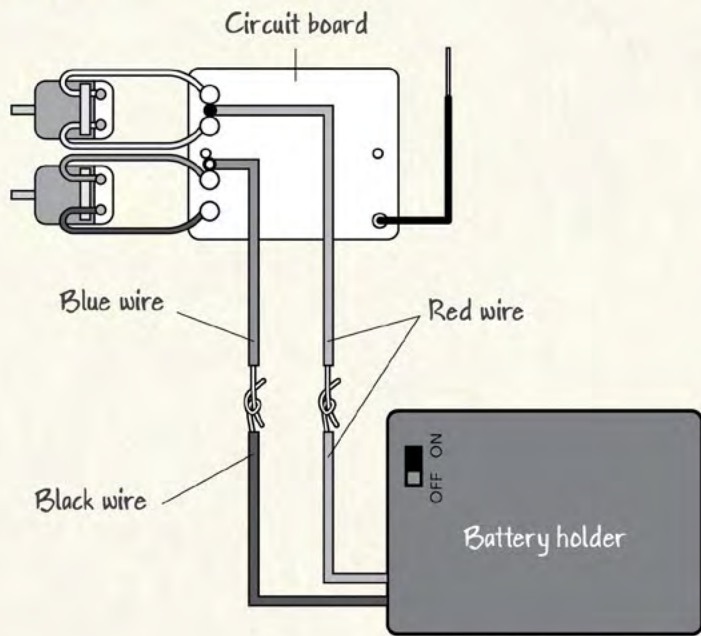
5. Attach the motor housing to the lower body.



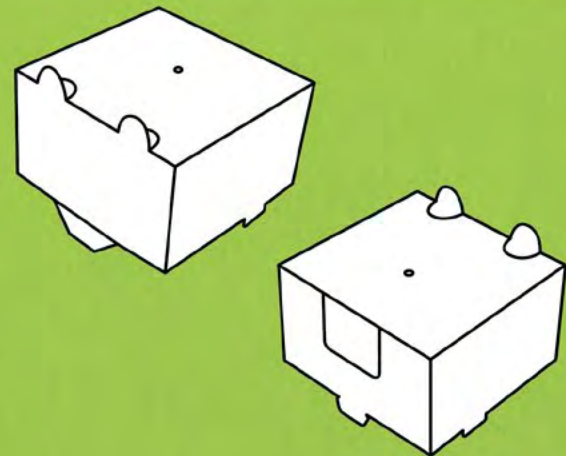
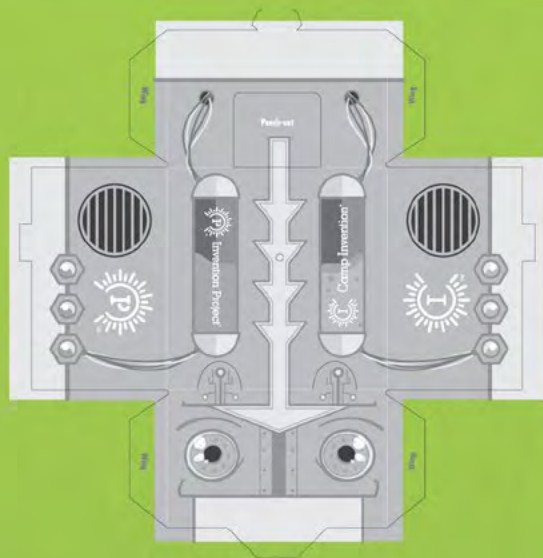
6. Insert 3 AA batteries into the battery pack. Then, attach it to the lower body.



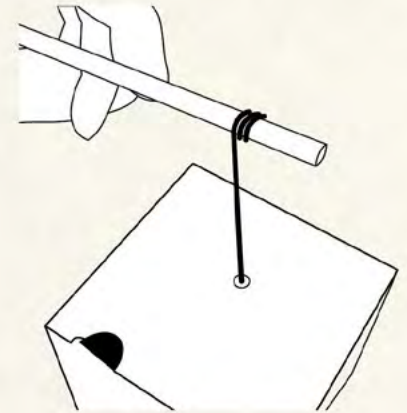
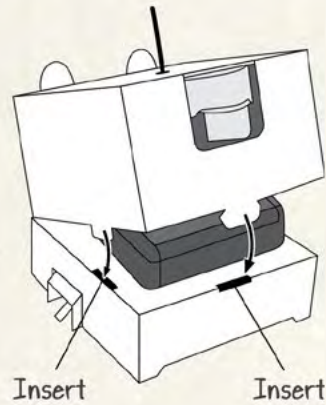
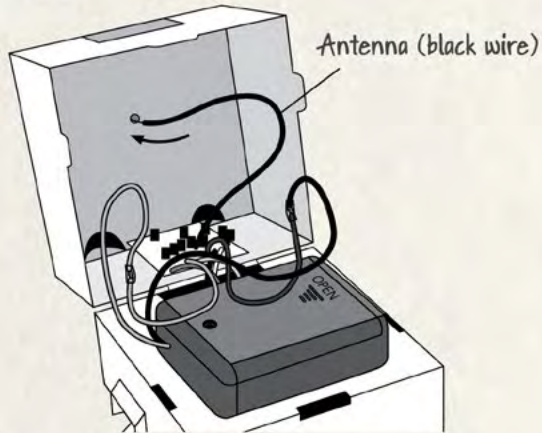
7. Connect the circuit board and the battery pack.



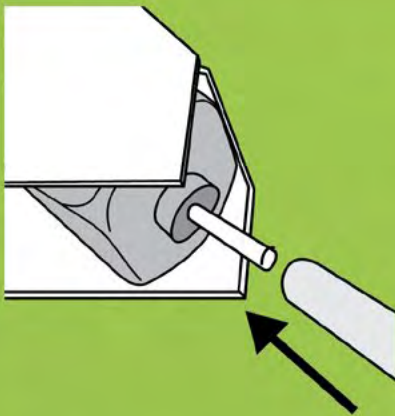
8. Assemble the upper body.



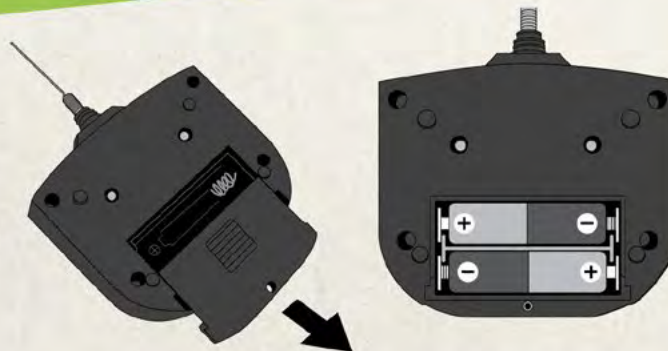
9. Attach the motor housing to the lower body.



10. Attach a tube to each motor axle.



11. Insert 2 AA batteries into the remote and get ready to roll!



Test your Bot!
If it's not working
on the first try,
that's okay. Keep
working at it.

TROUBLESHOOTING TIPS



If at any point your RC Origami Bot does not work, use these Troubleshooting Tips:

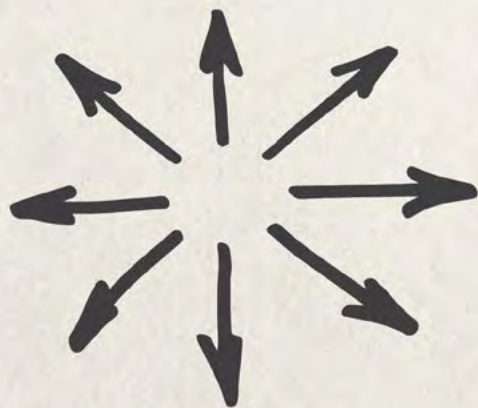
- If any of the wires become disconnected, you can try using tape to reattach them.
- Do not tape over the small, rectangular window on the lower body piece; this needs to be open to turn the Bot on and off.
- When securing the battery pack and the circuit board with tape, make sure that you leave the black wire off the circuit board free (not taped down).
- If the robot will not move straight, check the motor positions and length of the tubes covering the motor axles to see if both left and right motors are evenly in contact with the ground. Additionally, make sure the tubing pieces extend slightly beyond the motor axles (approximately 1mm).



"Know the problem you are trying to solve and approach it from several different directions."

– Radia Perlman, National Inventors Hall of Fame® Inductee

MAKE YOUR BOT MOVE

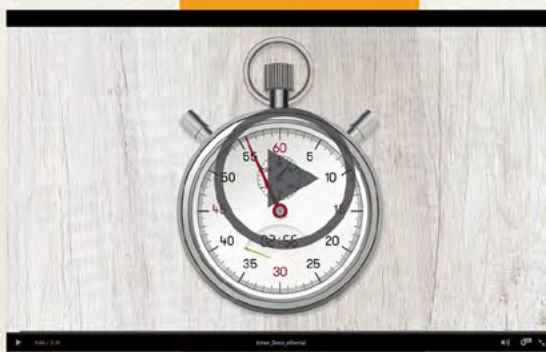


1. Play ball! Make a paper ball by crumpling up a piece of scrap paper.



2. Find an open space, like a large table or a smooth floor, and use masking tape to create a goal.

3. See how many goals your Bot can score!



4. After a few tests, modify your Bot to see how many more goals you can make in 3 minutes.

If possible, play the 3-Minute Timer online.

5. Create costumes, accessories, or party decorations for an RC Origami Bot dance party! Use items from around your home like paper, stickers, and upcycled plastic, along with other craft items like markers or paint, to give your Bot some personality.

6. If possible, choose one of the **Bot Bops Music Tracks** and have your Bot dance!



JAZZ

CLASSICAL

ROCK

TECHNO

POP

LATIN

CONGRATULATIONS!

You built a remote-controlled Bot!

I WONDER...

What kind of jobs, tricks, or tasks could your robot do?

In the future, what jobs do you imagine robots will do?

How can you modify your robot to do a job?

How can your robot help you?

MORE TO EXPLORE

Robots can be playful, but often, robots do serious jobs. Teleoperated medical robots are one of the most common types of medical robots used today. They allow physicians to interact with and treat patients that may be physically distant from them. Robotic technology is changing the face of medicine and pushing through barriers that previously made distant urgent care impossible.

MEET A HALL OF FAMER

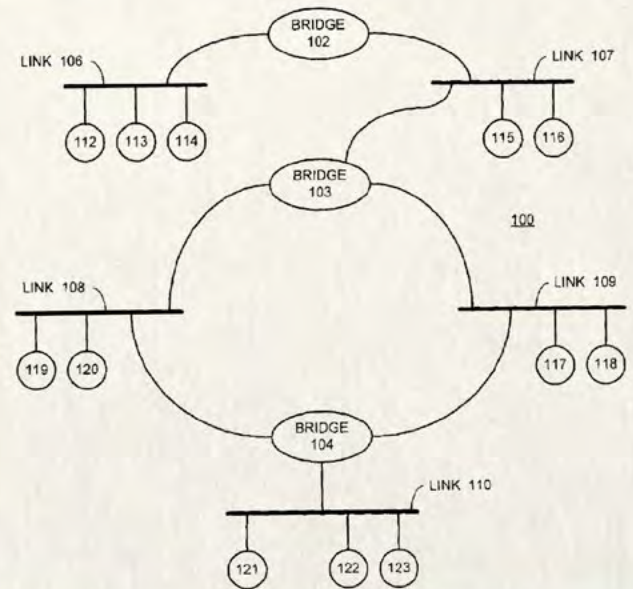


National Inventors Hall of Fame® Inductee Radia Perlman played a key role in creating the Internet. One of Radia's most widely acclaimed innovations is the Spanning-Tree Protocol (STP), which transformed Ethernet from a technology limited to a few hundred nodes confined in a single building, into a technology that can create large networks with hundreds of thousands of nodes spread over a vast area. She authored the book *Interconnections*, a game-changer for the field of networking. She also invented some of the first educational programming robots.

Learn more about Perlman here: invent.org/inductees/radia-perlman

Radia's patent for the method and apparatus for preventing spanning tree loops during traffic overload conditions.

U.S. Patent Mar. 4, 2008 Sheet 1 of 3 US 7,339,900 B2



If possible, watch Radia Perlman's video.





**National Inventors
Hall of Fame®**



Invention Project®

**Invention Project is an educational program from
the National Inventors Hall of Fame.**

Learn more at [invent.org](https://www.invent.org)

978-1-61823-119-2

© 2020 National Inventors Hall of Fame, Inc.