



ROBOT DESIGN CHALLENGE

Build your own Cool Stuff Museum!
Think like an engineer and work through this packet to design your own robot that can help solve a problem. You'll work with others to ask questions, receive feedback, and make changes to your robot, plus give feedback on other robot creations!

This build belongs to:

Brainstorming Purpose

EMPATHIZE

At iRobot, we are **mission driven builders**. This means we, like you, are here to build with purpose! Everything in the iRobot Cool Stuff Museum has a purpose, from entertaining toys and keeping people safe in dangerous places to exploring the ocean floor and now cleaning our homes!

In the first step of the engineering design process, let's practice empathy by considering **who** you want to design for and some challenges that exist. It's up to you to make the world a more joyful, safe, fun place to be! How will you do it?

- 1 Think of who you want to design a robot for. Will this robot be for you, your friend, someone in your family, your school, your community, your favorite book character, or maybe even your pet?

I am designing a robot for _____.

- 2 How would you describe them? List three important facts you know about them.

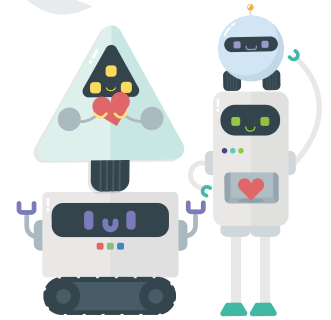
- 3 Now, let's think about some daily challenges they experience. Record your thoughts below.

DEFINE

Let's focus on one way your robot could help. What challenge would you like to solve?

My robot will be used to _____.

Empathy is understanding how someone else feels. It means you can put yourself in someone else's shoes to better understand their perspective, actions, and feelings.



Imagining Solutions

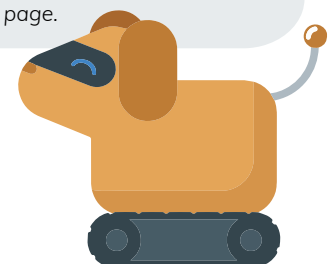


IDEATE

Let's dream up some possible ideas to help find a solution to your challenge. Use the post-it notes below to sketch or make notes about ways to achieve your solution. Try to fill up each post-it note here with a different idea. **Only spend 1-2 minutes on each note!**

Don't worry about focusing on perfection or getting too caught up in the details. Try to capture enough of each idea so you have options to consider!

Great work! Now that you've generated as many incredible robot ideas as you can, decide on which one you'd like to focus on and develop. Circle that idea and turn to the next page.

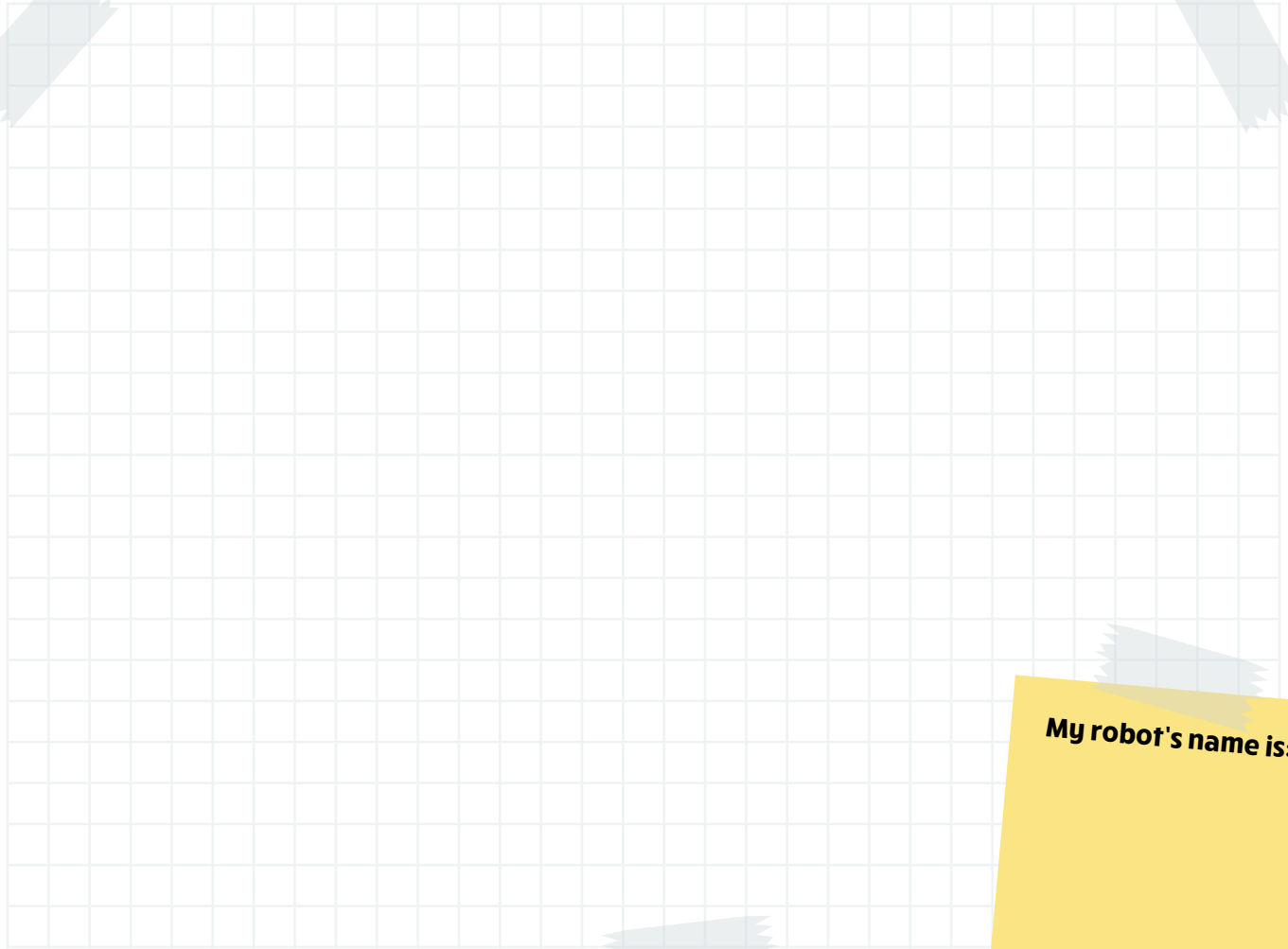


The Mega Sketch

Don't worry, if you're anything like iRobot engineers and designers, your first sketch might look **very different** than your final prototype!

PROTOTYPE

It's time to make your robot a reality on paper! Use this space to draw your robot based on your ideas from the previous page. Then, write a description of your robot below. Your robot also needs a name! Write your robot's name on the post-it note.



My robot's name is:

My robot's purpose is to

My robot is about the size of

My robot will be made from

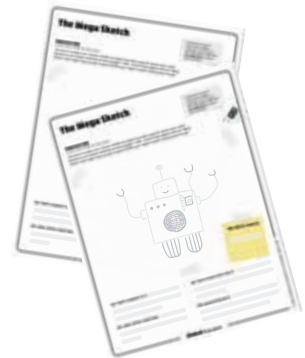
One special feature is

User Feedback

PAIR SHARE

In this step of the engineering design process, share your Mega Sketch robot design with a friend.

- 1** Decide who will share first. Robo Designer 1 will take two minutes to present their robot, who they are designing the robot for, the robot's purpose, and other helpful information.
- 2** Then, invite Robo Designer 2 to ask questions about your design. It's okay if you don't have the answers yet! Questions can help you think more about other perspectives and impressions.
- 3** Switch turns and let the Robo Designer 2 present their robot for two minutes. Robo Designer 1 will ask questions and give feedback.



Keep thinking like an engineer! Try out some of these phrases when giving feedback!

I really like how you _____!
This makes me feel _____.
I'm wondering about _____.
Why did you decide to _____?
How did you _____?
Have you thought about _____?

ROBO TWEETS

Build the hype and describe your robot designs with 20 words or less!

- 1** Now that you've heard about at least one robot design, use the Robo Tweet Template to share more about what surprised you or a feature you liked the best.
- 2** Then, complete another robo tweet about your robot design! Think about what you want people to know about your robot's purpose. Or, what makes it part of the next #CoolStuffMuseum?
- 3** Share your robo tweets with your friends!





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DATE



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DATE



Design Evolution

If someone said they think my robot looks like a garbage can, I need to think about how I can change my design. I don't want people to accidentally put a banana peel inside!



ITERATE + IMPROVE

Did your feedback session spark any new ideas? Did it make you think of something you had not considered? It's time to make your robot into version 2.0.

If you liked any of the suggestions, feel free to incorporate them here. Some suggestions might make you rethink parts of your robot. Some suggestions might not make sense for your final goal. The most important part is that you get to decide what feedback to use.

Some of our best work comes from collaborating with others. In the iRobot Cool Stuff Museum, many of the robots helped inform future robots from their shapes and sensors to their software and features. For example, one of the early toy robots, Meeps, has the same circular base as Roomba, our vacuuming robot! Anything is possible when all ideas are welcome!



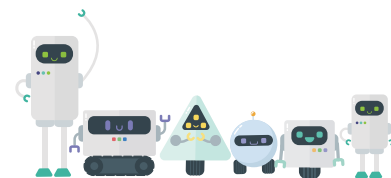
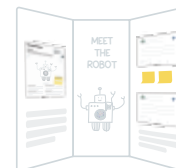
Museum Showcase



COMMUNITY SHARE

It's time to share your hard work with others! Just like in the iRobot Cool Stuff Museum, think about the story you want to share. You've created an incredible robot design, but the process and experience is important as well!

- 1 Decide how you want to display and present your robot (poster board, cardboard prototype, etc.) and create your final robot to showcase!
- 2 Set up your robot exhibit. Include a description of your robot and its function so other Museum guests can easily understand your robot.
- 3 Invite others to take a gallery walk and come explore all the robots in your Cool Stuff Museum!



Tip: Did you design your robot to move around, turn, light up, or play music? If so, check out the 3D simulator in the iRobot Coding App to start exploring how you can control a robot with code. The simulated Root Robot might not look like your robot design, but you can demonstrate and program a task that your robot might do!

Ready to start coding?
Visit code.irobot.com



GOING FURTHER

- 1 Tell us about your robot (and other cool stuff!) at [@iRobotEducation](https://twitter.com/iRobotEducation)
- 2 Take a virtual tour on our app by downloading the **iRobot Cool Stuff Museum**
- 3 Be part of living history by coding the **Root Coding Robot** with the **iRobot Coding App**! Visit code.irobot.com to start coding now!