In this project you will make a chatbot that can answer questions about a topic of your choice.
1. **Decide on a topic** for your chatbot
   Choose something that you know well enough to be able to answer questions about.
   *It could be a place (e.g. The town where you live?)*
   *It could be an animal (e.g. Tigers? Dinosaurs?)*
   *It could be an organisation (e.g. Your school)*
   *It could be something from history (e.g. Vikings? Romans?)*
   *For the rest of this worksheet, I’ll be using owls*

2. **Think of five things** someone might ask about your topic
   *e.g. for owls, this could be:*
   *What do owls eat?*
   *Where in the world do owls live?*
   *How long do owls live?*
   *What types of owls are there?*
   *How big do owls grow?*

3. Go to [https://machinelearningforkids.co.uk/](https://machinelearningforkids.co.uk/) in a web browser

4. Click on “**Get started**”

5. Click on “**Try it now**”

6. Click on “**Projects**” on the top menu bar

7. Click the “**+ Add a new project**” button.
8. Name your project and set it to learn how to recognise “text”. Click the “Create” button.

9. Click on your new project in the projects list.

10. Click the Train button.

11. Click the “+ Add new label” button.
12. Type in **one word** that sums up the first of your things from Step 2, then click **Add**.

*I used “food” to sum up questions like “What do owls eat?”*

13. Do that again for all of the things in your list from Step 2

*The words you choose don’t really matter, as long as you understand what they mean.*

14. Click the “**+ Add example**” button in one of the buckets
15. Type in an example of how someone might ask that question

16. Click “Add”

17. Repeat until you’ve got **five examples** of how to ask that question.

18. Repeat until you’ve got at least five examples in every bucket
19. Click on the “< Back to project” link

20. Click the “Learn & Test” button

21. Click the “Train new machine learning model” button

As long as you’ve collected enough examples, the computer should start to learn how to recognise questions from the examples you’ve given to it.

22. Wait for the training to complete.

This might take a couple of minutes.

It’s finished once you see the “status” change to “Available”

23. Click the “< Back to project” link
24. Click the “Make” button

25. Click “Scratch 3”

26. Click the “Open in Scratch” button

27. Open the Owls project template
   *Click Project templates and find Owls in the list of templates*
28. Create this little snippet of script but don’t attach it to anything yet

*Make sure you choose “owl says” for the orange block.*

![Image of the snippet](image)

29. Duplicate it four times and join them all together

*Right-click on it, and click “Duplicate”*

![Image of four duplicates](image)

30. Fill in each copy of the block

*Drag the label for one of your questions into the top space, and Type the answer to the question into the bottom space*

![Image of filled-in blocks](image)
31. Drag this new block into the Green Flag block prepared for you. 
Remove the “Sorry. I haven't been taught anything yet.” block and replace it with your new chunk of script.

32. Draw your chatbot

Unless you’ve chosen owls as a topic, you’ll need to draw your own character. If you provide different costumes, you can animate your character while it talks.
33. Test your chatbot!

*Click the green flag and try asking the owl a question*

What have you done so far?

You’ve started to train a computer to recognise questions on a topic. Instead of trying to write rules to be able to do this, you did this by collecting examples. These examples were used to train a machine learning “model”.

This is called “supervised learning” because of the way you are supervising the computer’s training.

The computer will learn from patterns in the examples you’ve given it, such as the choice of words, and the way questions are structured. These will be used to be able to recognise new questions.

The biggest problem with this is that if you ask it something unexpected, it will still give you one of the answers you’ve written
34. Create this little chunk of script, that you can use when someone asks a question that wasn’t on your list from step 2.

*The confidence score is a percentage (from 0 to 100).*

*It will be lower if someone asks a question that isn’t similar to any of the examples you used to train the machine learning model.*

*Use this to return a “I don’t understand” message if the score is too low.*

35. Add this into your script from before.
Ideas and Extensions

Now that you’ve finished, why not give one of these ideas a try?

Or come up with one of your own?

Try other chatbots

http://talktothetrex.com is a good example of the sort of thing you’ve made. Give it a try to get ideas of how to improve your bot.

Add more topics

Can you add more topics to your chatbot, so that there are more types of question that it can answer?

Provide alternate answers

If someone asks the same question more than once, they’ll get the exact same answer every time. Can you update your Scratch code so that it varies the answers each time a little? Or starts the answer with “You’ve asked me this before, but”

Ask follow-up questions

Can you update your Scratch script so that it replies with a question? It can then recognise the answer to that question, in a similar way to how you made it recognise questions.

Learn about how it works

Click on the “Describe your model” button on the “Learn & Test” page to learn more about how the model you’ve trained was created.