



Judge a book

In this project, you will investigate whether it's really possible to judge a book by its cover.

You will make a game in Scratch to see if a computer can guess the genre of a book based only on a picture of its cover.

To do this, you'll first need to train your computer to recognise book covers.

The image shows the Scratch programming environment. On the left, the script palette is open, displaying various categories of blocks: Motion, Looks, Sound, Events, Control, Sensing, Operators, Variables, My Blocks, and Images. A specific script for the 'judge a book' sprite is visible:

```
when green flag clicked
  repeat (pick random 1 to 100)
    next costume
  end
  when this sprite clicked
    think [Hmm... v]
    think [join [I think this book is] [recognise image costume] v]
```

The stage area on the right shows a book cover for "That's not my dinosaur..." by Usborne. A thought bubble from the book says, "I think this book is childrens". Another thought bubble says, "its body is too squashy." The book cover features a purple dinosaur with green spots and a small mouse.



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1. Go to <https://machinelearningforkids.co.uk/> in a web browser
2. Click on “**Get started**”
3. Click on “**Log In**” and type in your username and password
If you don't have a username, ask your teacher or group leader.
4. Click on “**Projects**” on the top menu bar
5. Click the “**+ Add a new project**” button.
6. Name your project “judge a book” and set it to learn how to recognise “**images**”. Click “**Create**”

Start a new machine learning project

Project Name *

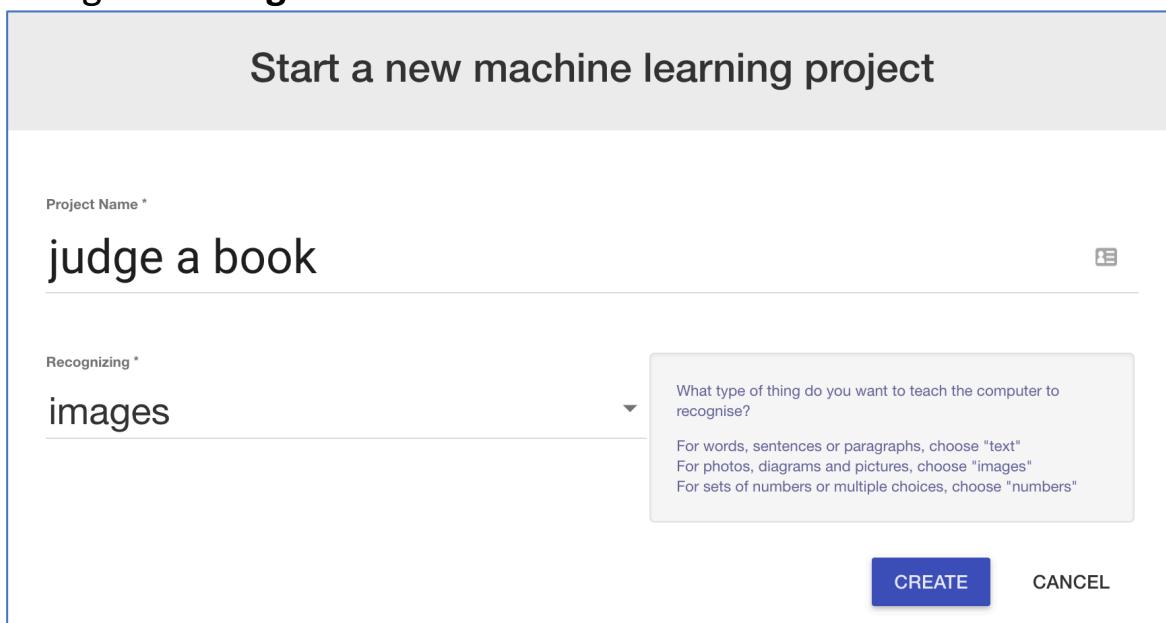
judge a book

Recognizing *

images

What type of thing do you want to teach the computer to recognise?
For words, sentences or paragraphs, choose "text"
For photos, diagrams and pictures, choose "images"
For sets of numbers or multiple choices, choose "numbers"

CREATE CANCEL



7. You should now see “**judge a book**” in your projects list. Click on it.

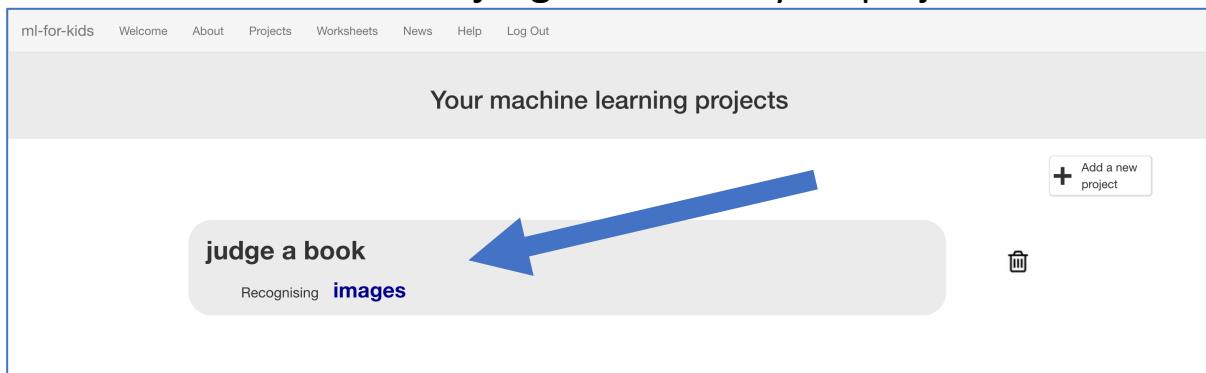
ml-for-kids Welcome About Projects Worksheets News Help Log Out

Your machine learning projects

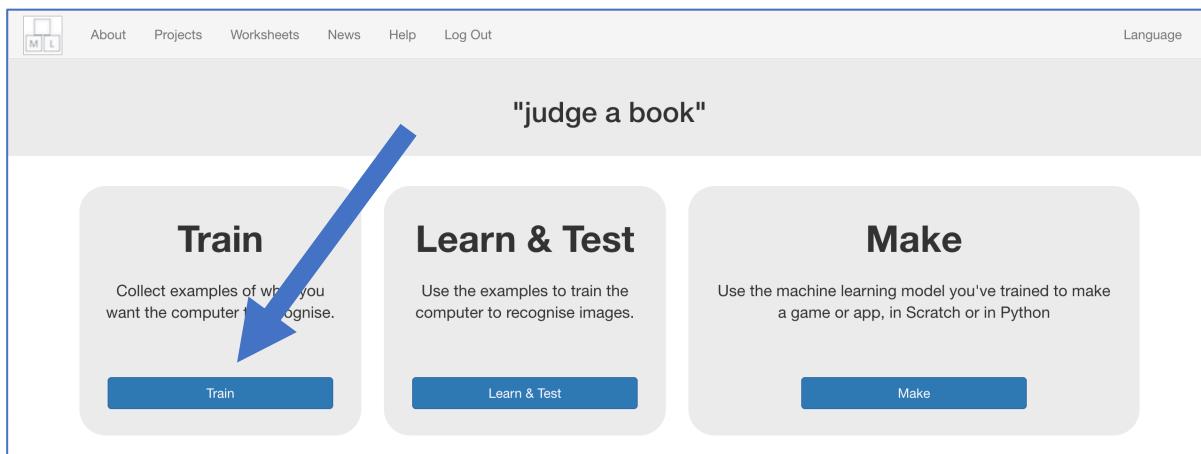
judge a book

Recognising images

Add a new project



8. Click the “Train” button



9. Choose a few genres of books.

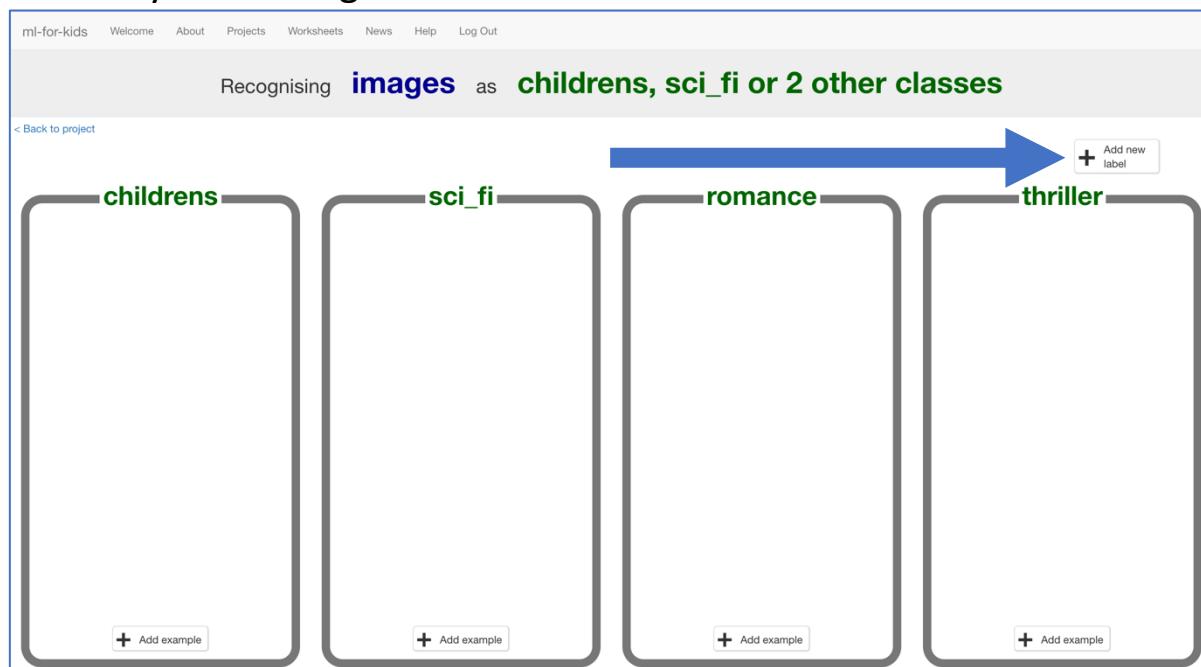
“Genre” means the type of story.

For the rest of this worksheet, I’ll be using:

“children’s”, “sci fi”, “romance” and “thriller”.

Choose your own. You don’t have to have four – two or three is fine, too.

10. Use the “+ Add new label” button to create a bucket for each genre of book you’re using.



11. In another web browser window, find pictures of book covers. You need to find a website of pictures of book covers. This could be a library website, or a site that sells books like Amazon. Find a site that arranges books by genre already to make it easier for you. Resize the windows so your training buckets are next to the book site.

The left side shows a training interface for image recognition. It has four labeled buckets: 'childrens' (top-left), 'sci_fi' (top-right), 'romance' (bottom-left), and 'thriller' (bottom-right). Each bucket has a '+ Add example' button. The right side shows a screenshot of the Amazon website under the 'Children's Books' category. It displays several book covers with their titles, prices, and ratings. One book, 'The World's Worst Children 2' by David Walliams, is highlighted as a 'Best Seller'. The interface allows users to drag book images from the Amazon page into the corresponding buckets on the left.

12. Find pictures of book covers in each genre you've chosen. Drag the best examples into the buckets in your training page. Try and find about 20 examples of each genre.

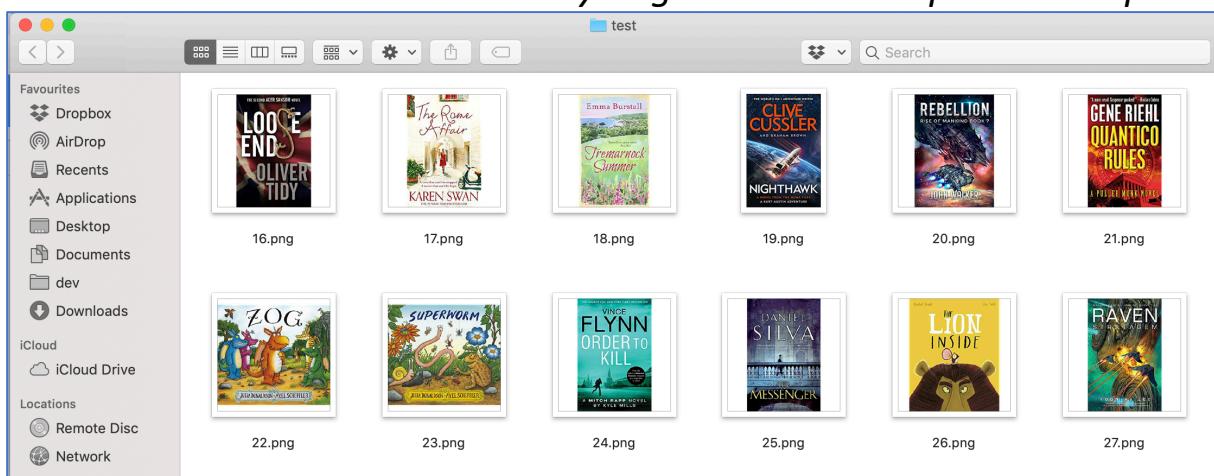
This screenshot shows the same training interface as above, but with more book covers visible in each bucket. The 'childrens' bucket contains 20 book covers, the 'sci_fi' bucket contains 20, the 'romance' bucket contains 20, and the 'thriller' bucket contains 20. Each book cover includes its title, author, and a small preview image. The interface includes a 'Add new label' button at the top right. The bottom right corner of each bucket displays the number '20', indicating the count of examples in that category.

13. Save some different pictures of book covers to your computer.

Ask your teacher or group leader if you're not sure how to save a picture from a website.

These are the pictures that you'll use to test the computer with.

You need some of each of your four genres. It's important that none of these are the same as the covers you gave to the computer in step 12.



14. Click the “< Back to project” link. Then click “Learn & Test”.

15. Click “Train new machine learning model”.

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

Machine learning models

< Back to project

What have you done?

You have collected examples of images for a computer to use to recognise when images are childrens, sci_fi or 2 other classes.

You've collected:

- 20 examples of childrens,
- 20 examples of sci_fi,
- 20 examples of romance,
- 20 examples of thriller

What's next?

Ready to start the computer's training?

Click the button below to start training a machine learning model using the examples you have collected so far.

(Or go back to the [Train](#) page if you want to collect some more examples first.)

Info from training computer:

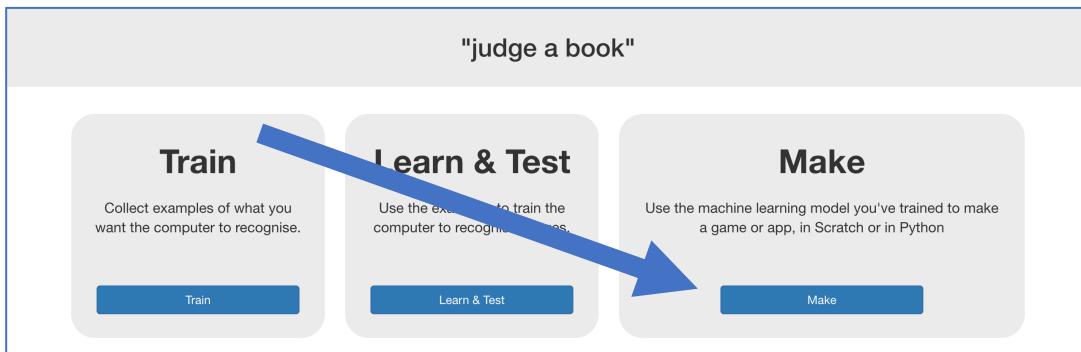
Train new machine learning model

16. The training might take a few minutes to complete

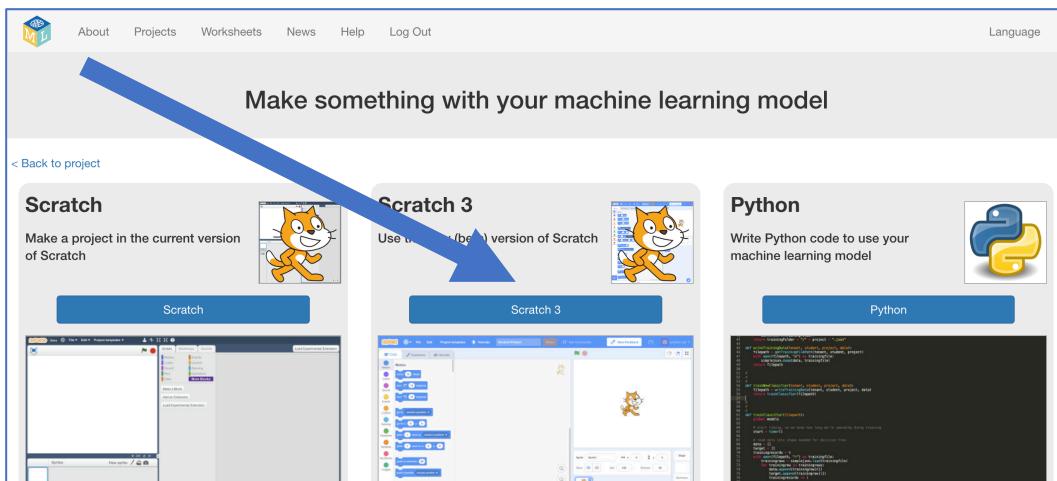
You can carry on and start making your Scratch project, but it won't work until the training has finished.

17. Click the “< Back to project link”

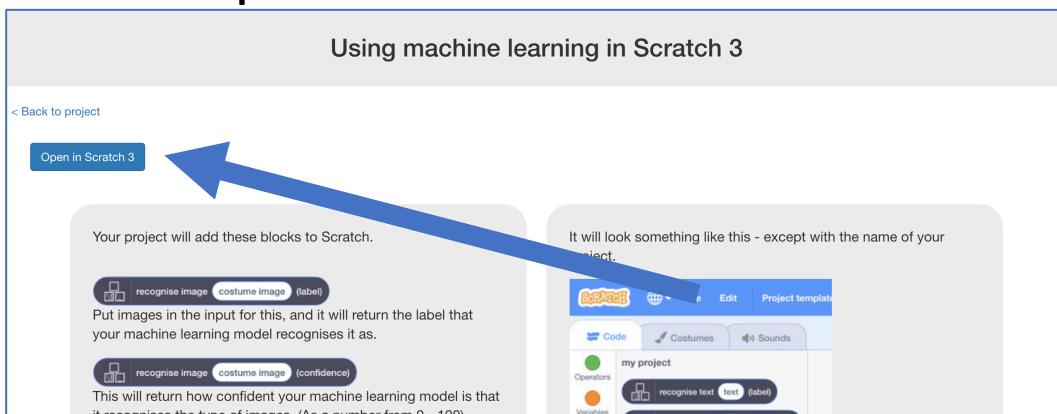
18. Click the “Make” button



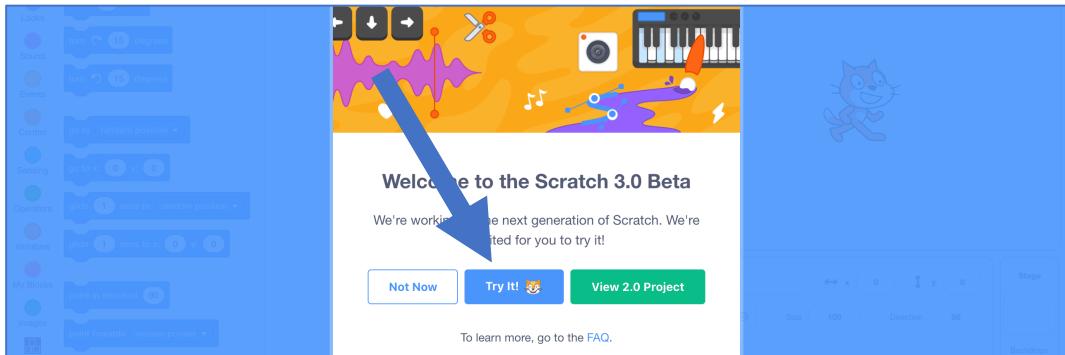
19. Click “Scratch 3”



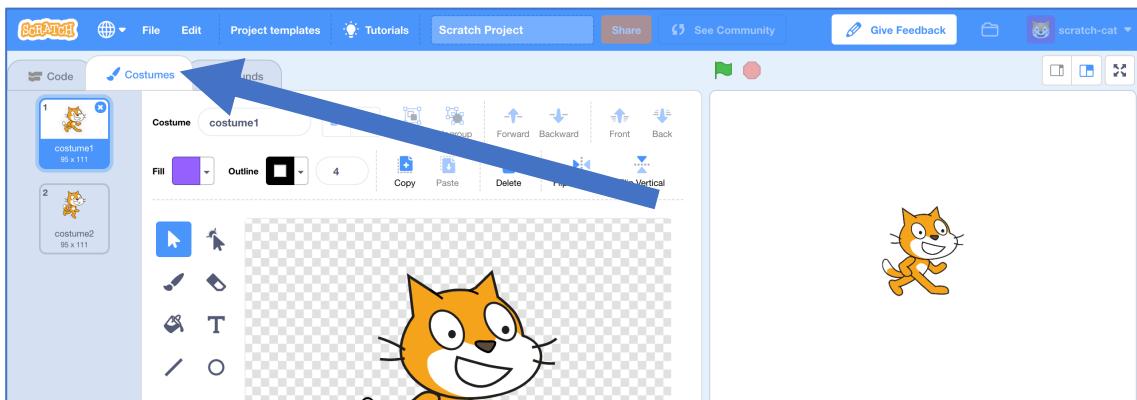
20. Click “Open in Scratch”



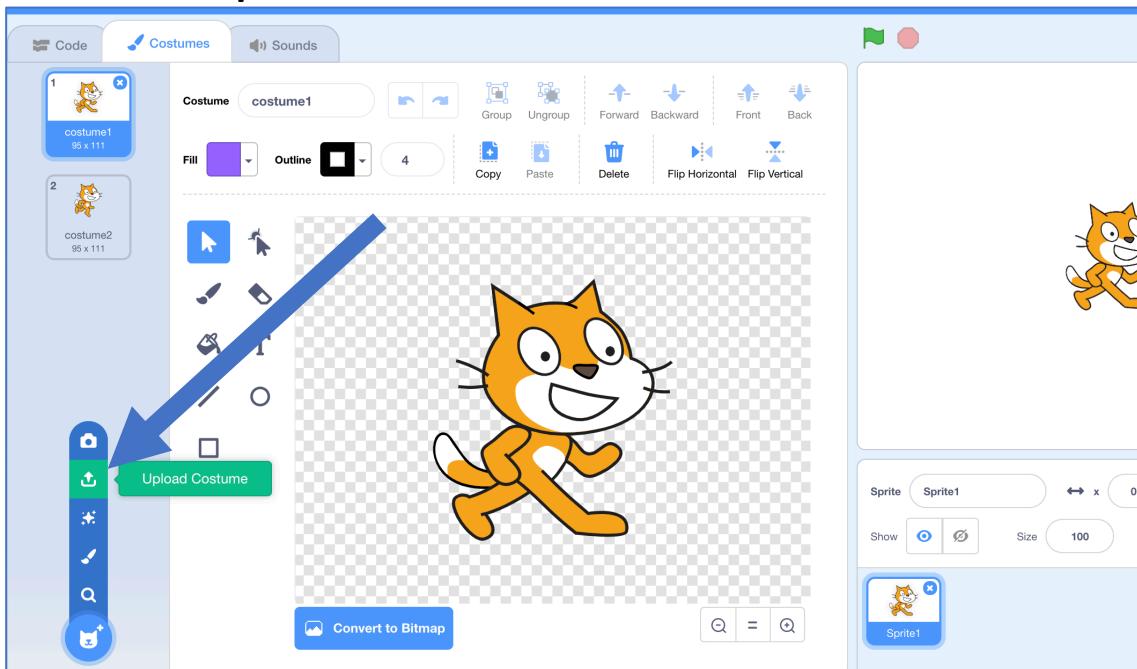
21. Scratch 3 is still quite new, so you might need to click “Try it!”



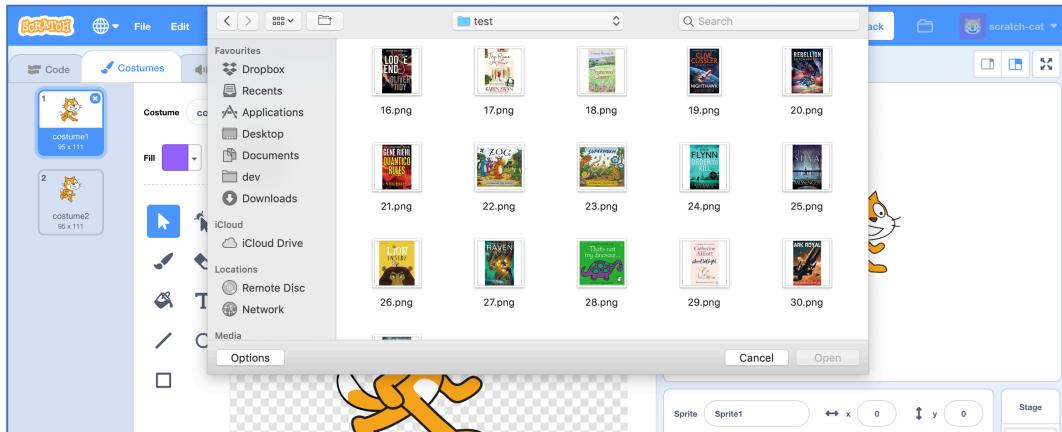
22. Click the “Costumes” tab



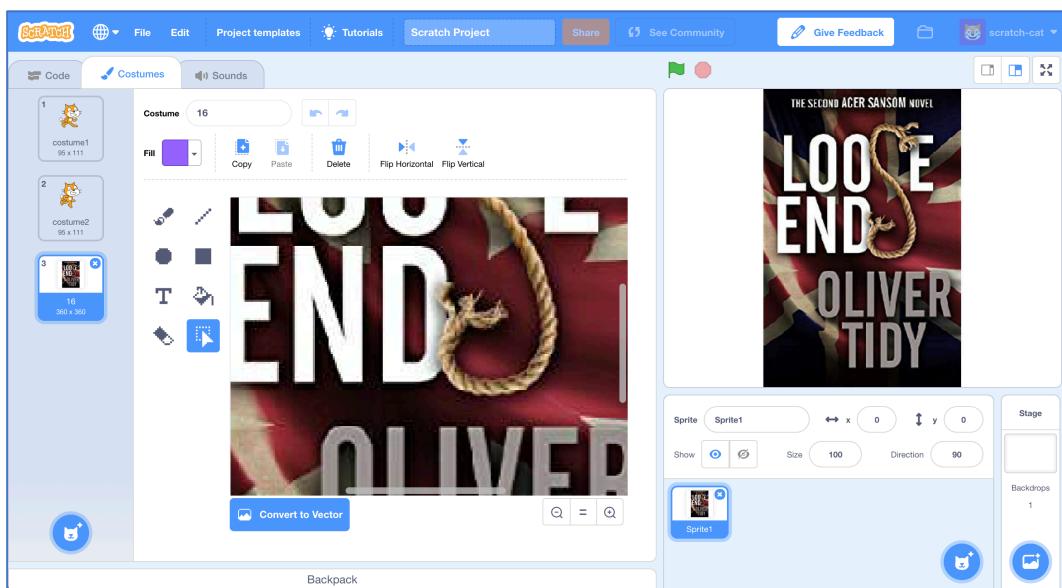
23. Click “Upload costume” in the bottom left



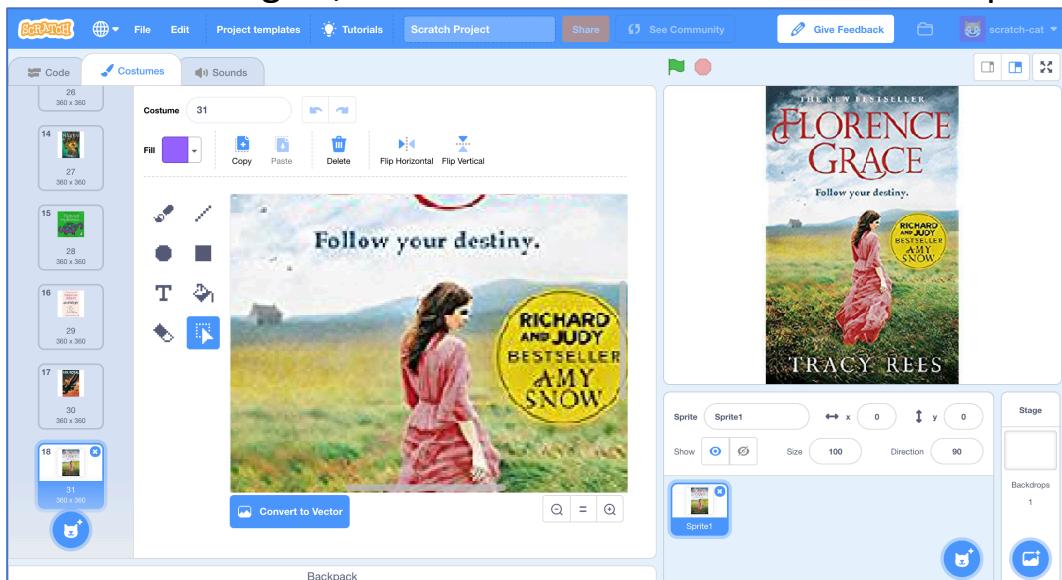
24. Find the pictures that you saved in Step 13



25. Add the first book cover as a costume

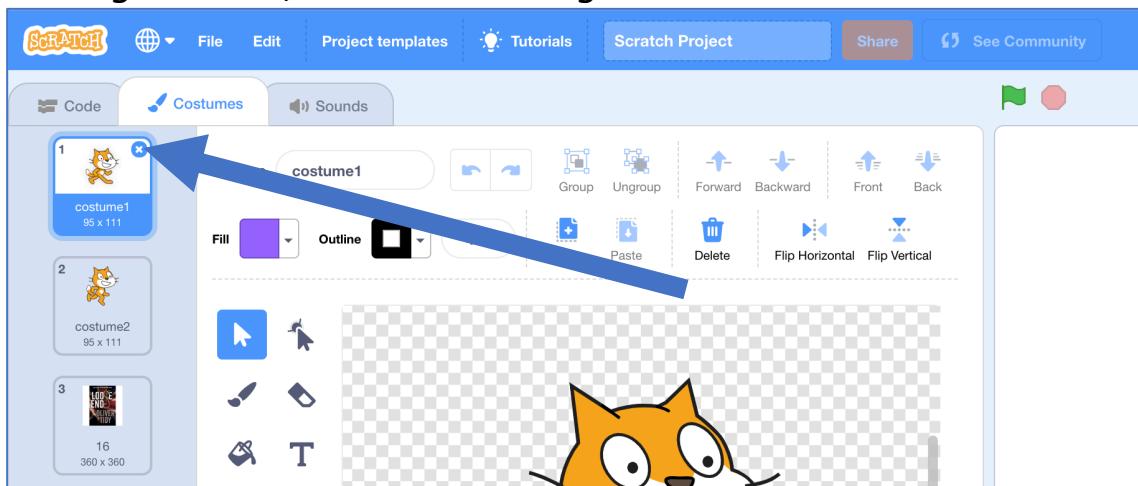


26. Do that again, to add all of the test covers from Step 13 as costumes

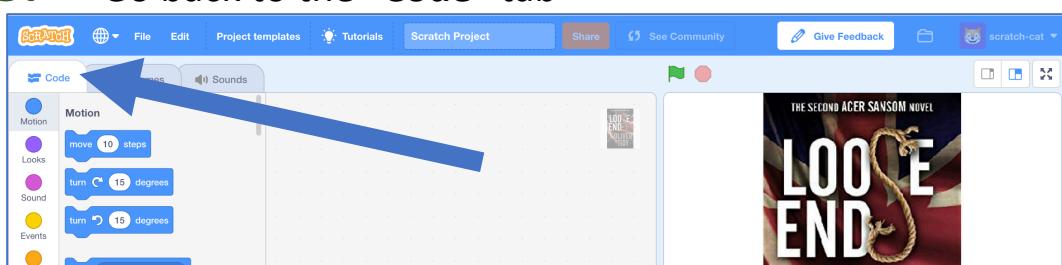


27. Delete **both** of the cat costumes

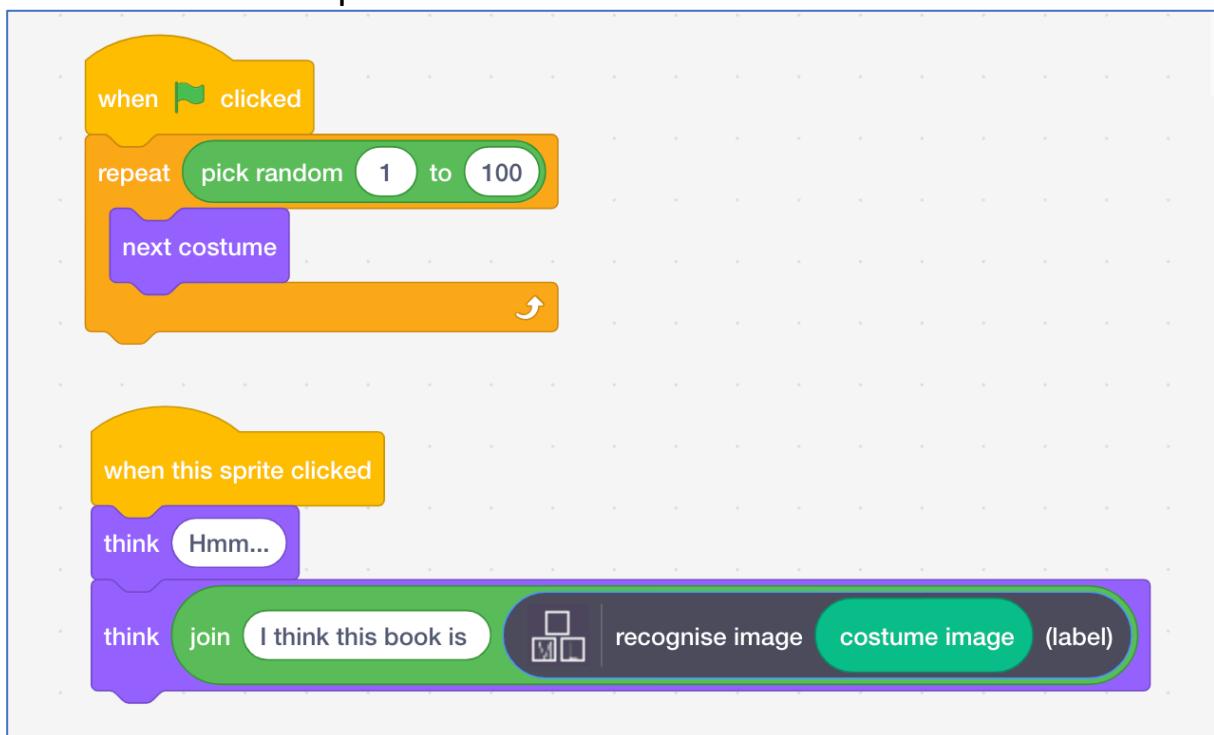
Scroll to the top of the list of costumes and delete the cat costumes by clicking on them, and then clicking the blue cross



28. Go back to the “Code” tab



29. Enter this script

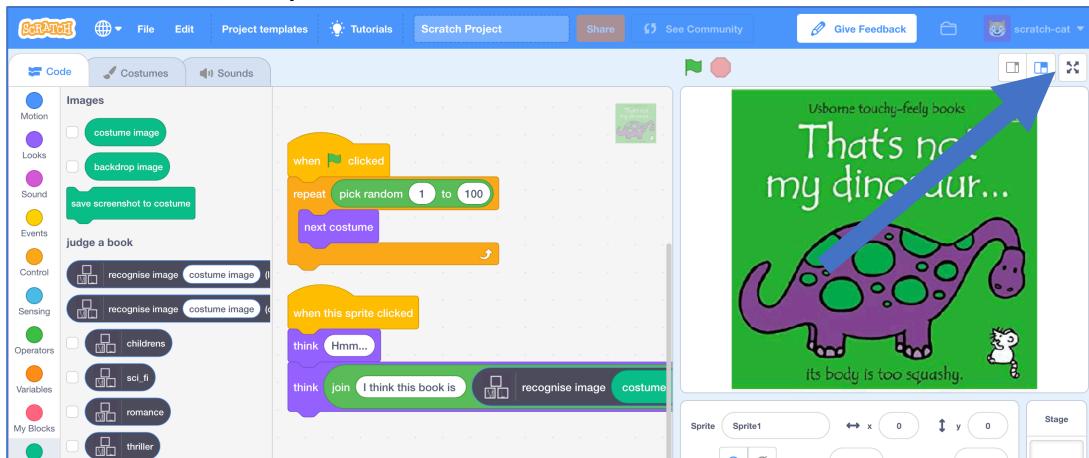


30. It's time to test!

To make this fair, you haven't shown the test images to the machine learning computer.

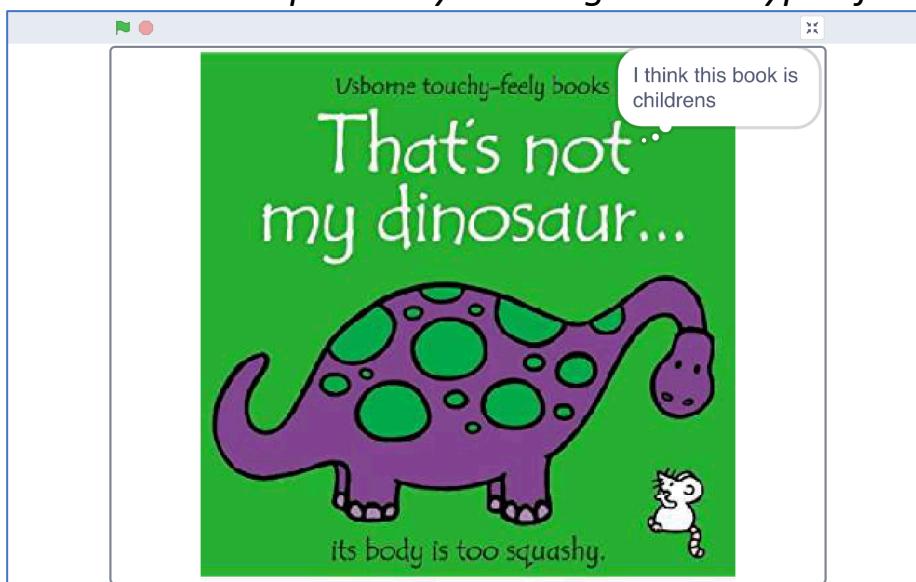
Click the fullscreen icon, and then click the green flag.

Your Scratch script will choose a random test cover



Click on the book cover

Your Scratch script will try to recognise the type of book



What have you done?

You've trained a machine learning model to classify pictures. The computer learned from patterns in the colours and shapes from each of the images you've given it. These were used to recognise new covers.

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?

Alternative project ideas

Instead of book covers, why not try:

- album covers – train a computer to recognise the music genre of an album from a picture of the cover – do pop music albums look different from rap albums?
- movie posters – train a computer to recognise the type of movie based on a picture of the poster – do action movie posters look different from period drama movie posters?