



Shy Panda

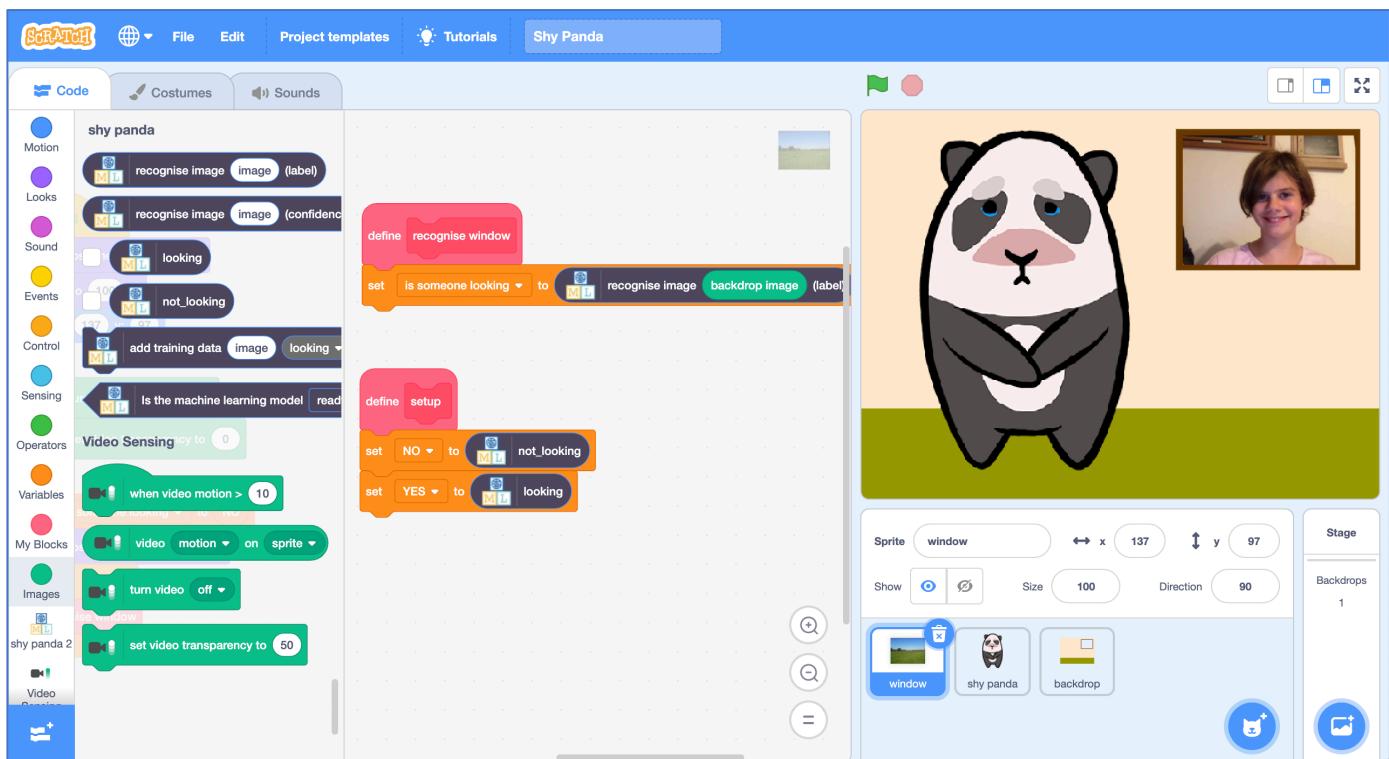
In this project you will make a dancing panda.

It'll be a shy panda, that will get embarrassed and stop dancing if it sees you looking in through the window.

You'll train it so that if you cover your eyes, it'll recognise that you're not looking and keep dancing.

The idea for this project came from Cassie Evans. You can see her version of it at
<https://codepen.io/cassie-codes/pen/jKaVqo>

The panda artwork in this project was by Ed Moffatt from XMPT Games.



This project worksheet is licensed under a Creative Commons Attribution Non-Commercial Share-Alike License
<http://creativecommons.org/licenses/by-nc-sa/4.0/>

- 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 to create one for you.
If you can't remember your password, ask your teacher to reset it for you.

- 4.** Click on “**Projects**” on the top menu bar

- 5.** Click the “**+ Add a new project**” button.

- 6.** Name it “shy panda” and set it to learn to recognise “**images**”
*If the form asks where to train the model, choose “**on your computer**”*

Start a new machine learning project

Project Name *

shy panda

Recognising *

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.** Click the “**Create**” button

- 8.** You should see “**shy panda**” in the list of your projects. Click on it.

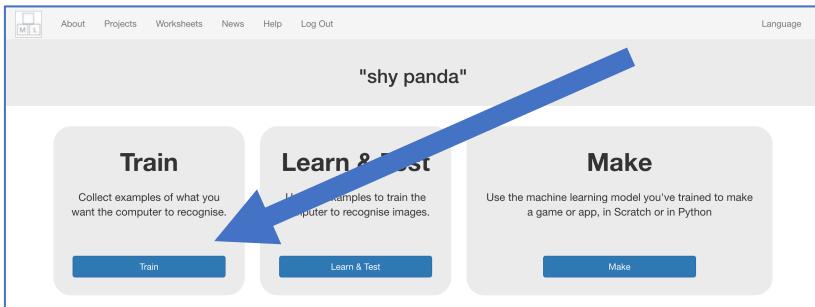
Your machine learning projects

shy panda

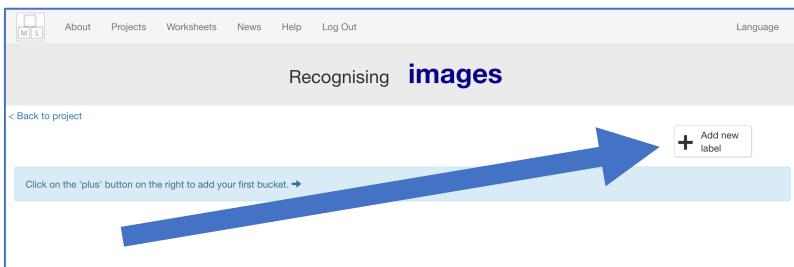
Recognising images

Add a new project

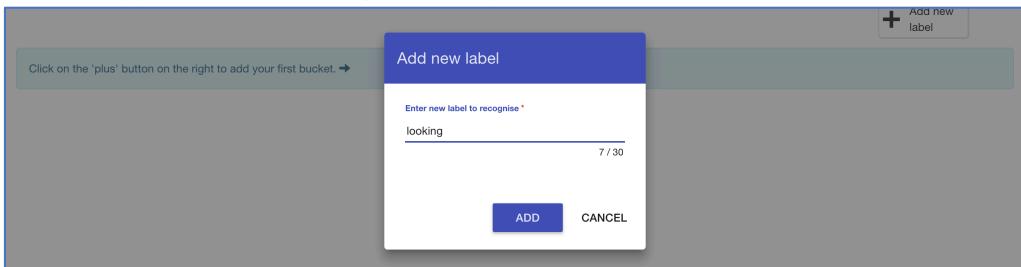
9. Click the Train button



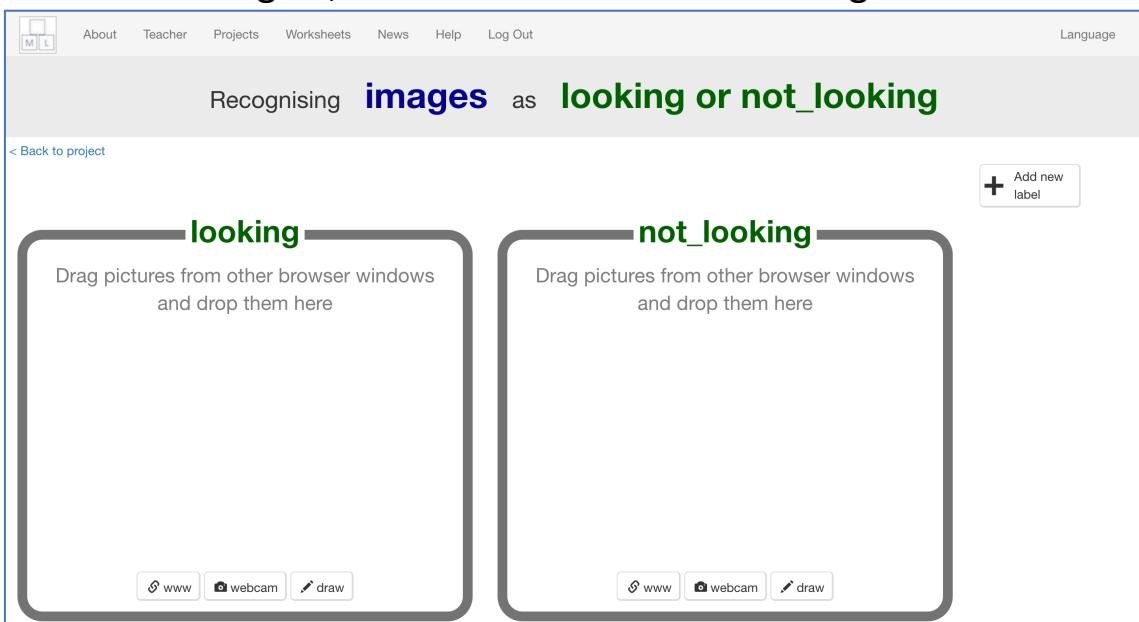
10. Click "+ Add new label"



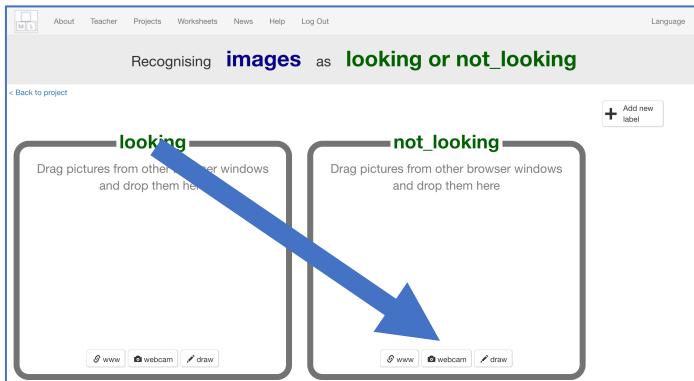
11. Type in "looking", and press Add



12. Do that again, but this time add "not looking"

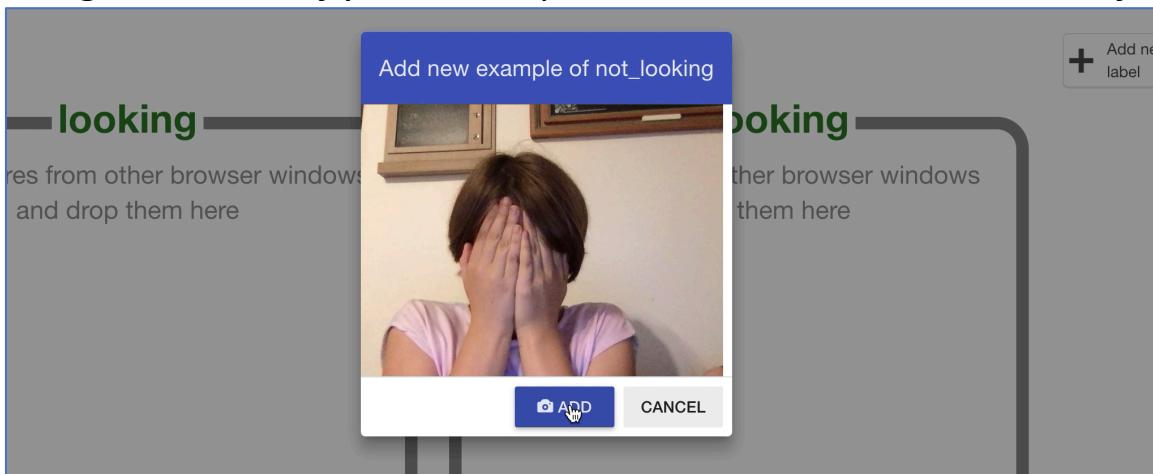


13. Click on the “webcam” button in the “not looking” bucket

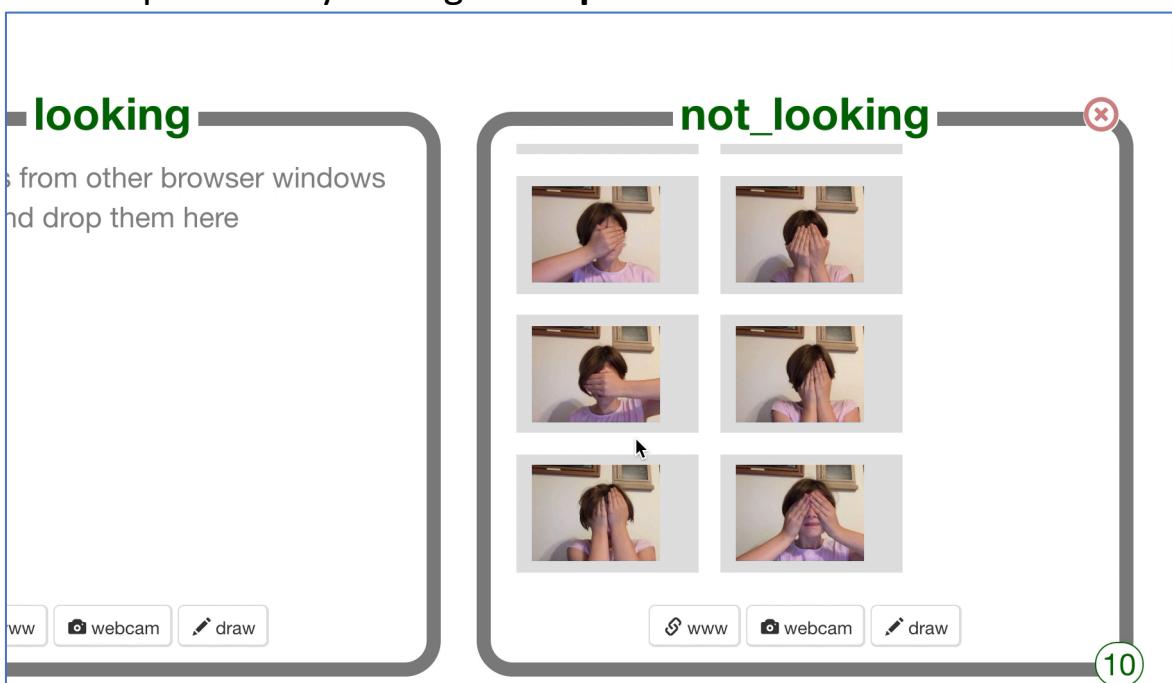


14. Cover your face with your hands, and take a photo

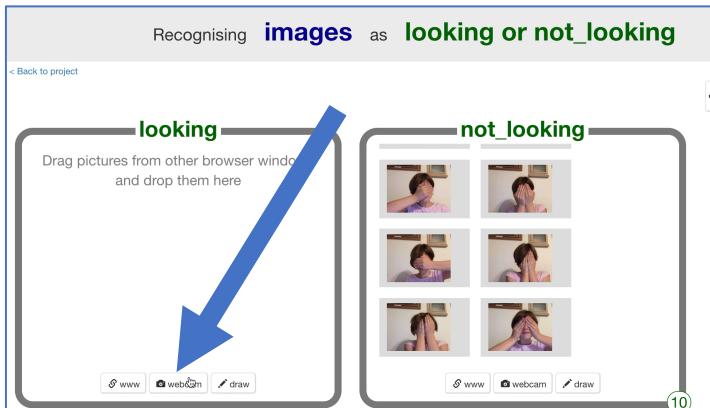
It might be easier if you have a partner to click the “Add” button for you!



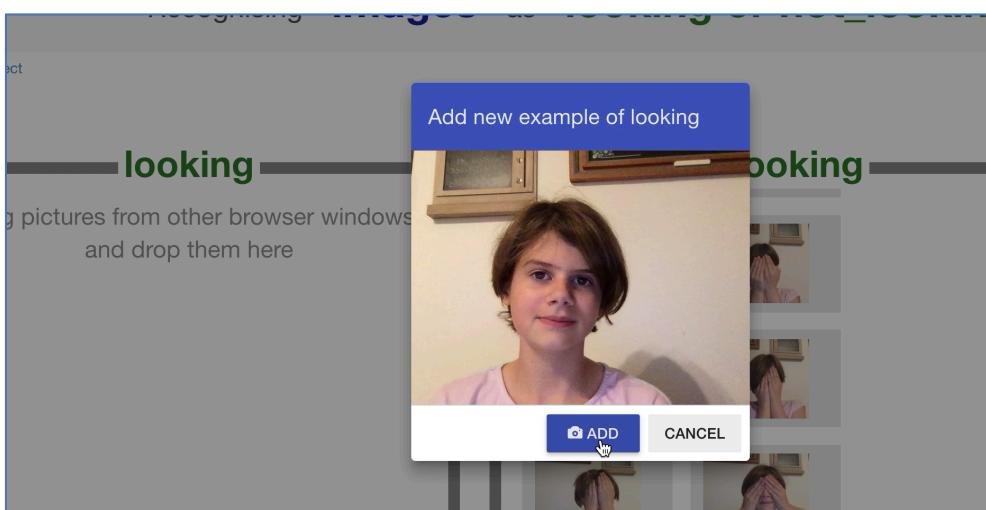
15. Repeat until you've got ten photos like this



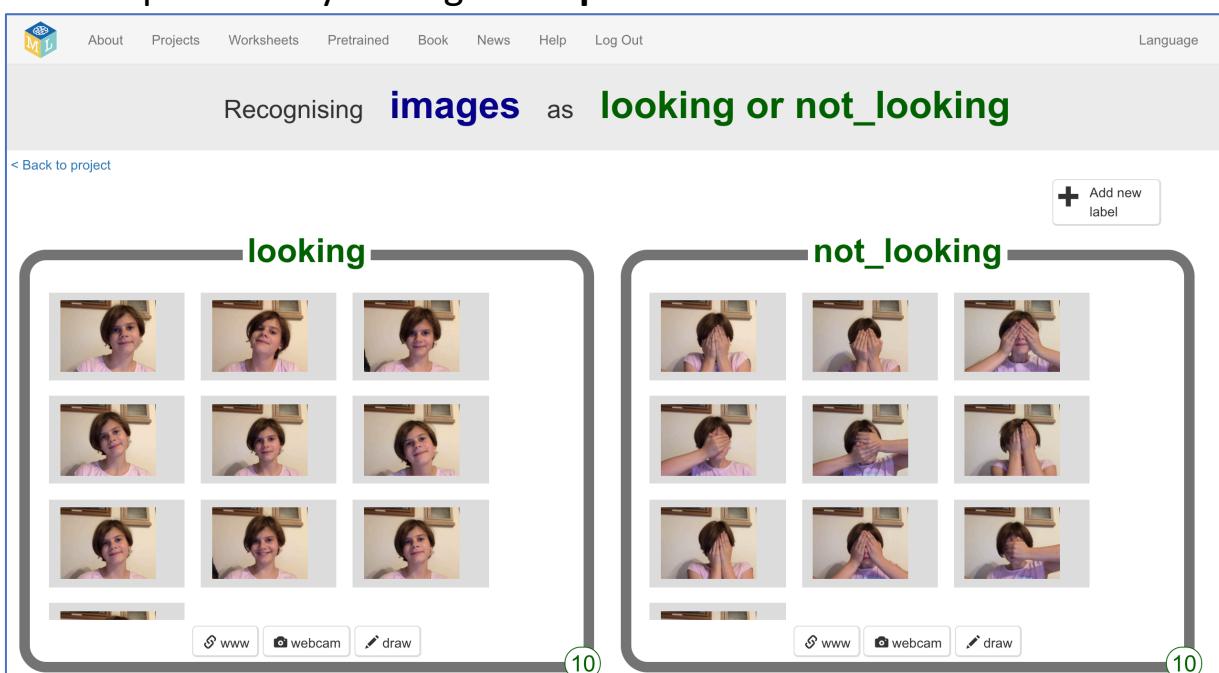
16. Click the “webcam” button in the “looking” bucket



17. Look at the camera and click “Add”



18. Repeat until you've got ten photos like this

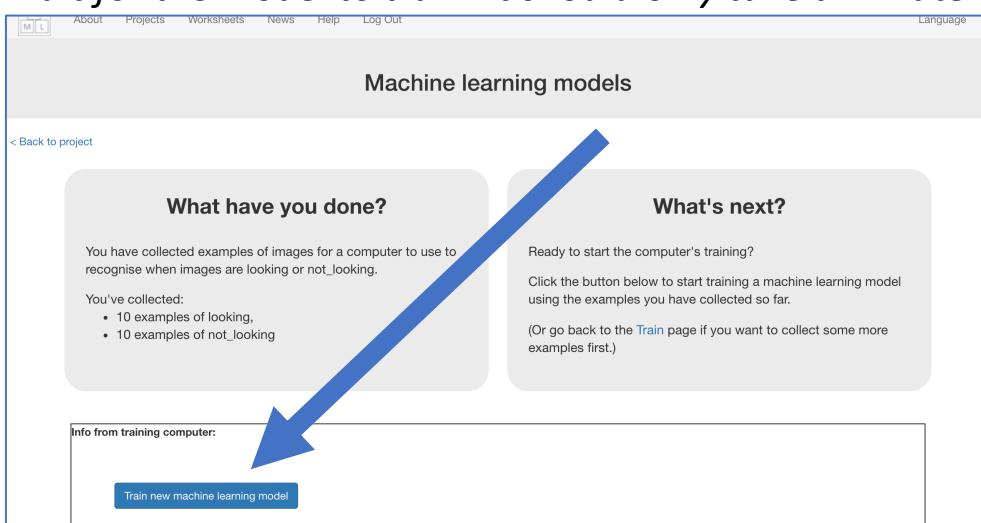


19. Click “< Back to project”

20. Click **Learn & Test**

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

Wait for the model to train. It should only take a minute.



What have you done so far?

You've started to train a computer to recognise whether photos of a face and photos of a covered face. You are doing it by taking example photos. These examples are being used to train a machine learning “model”.

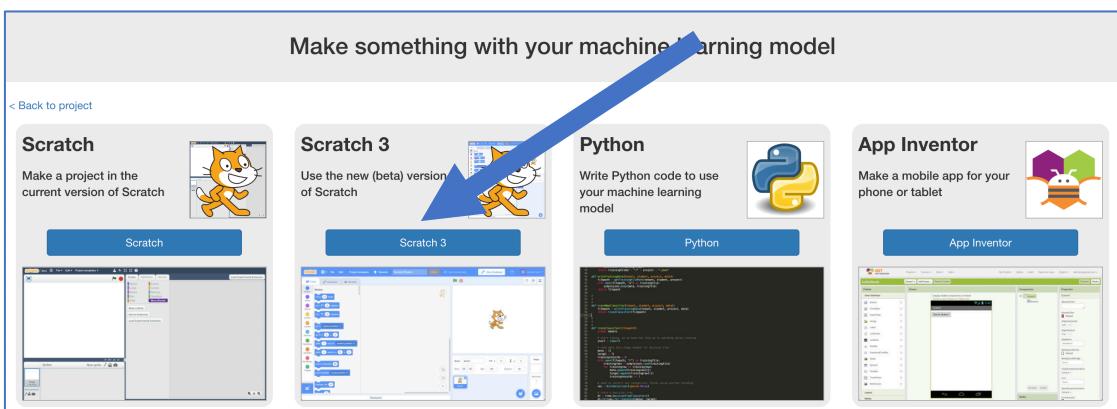
This is called “supervised learning” because of the way you are supervising the computer’s training.

The computer will learn from patterns in the shapes from each of the photos you’ve given it. These will be used to recognise new photos.

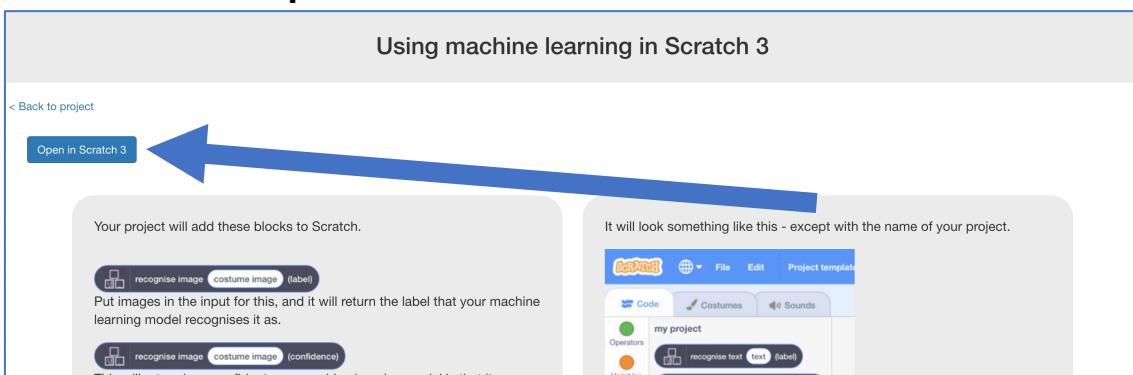
22. Click “< Back to project”

23. Click the “Make” button

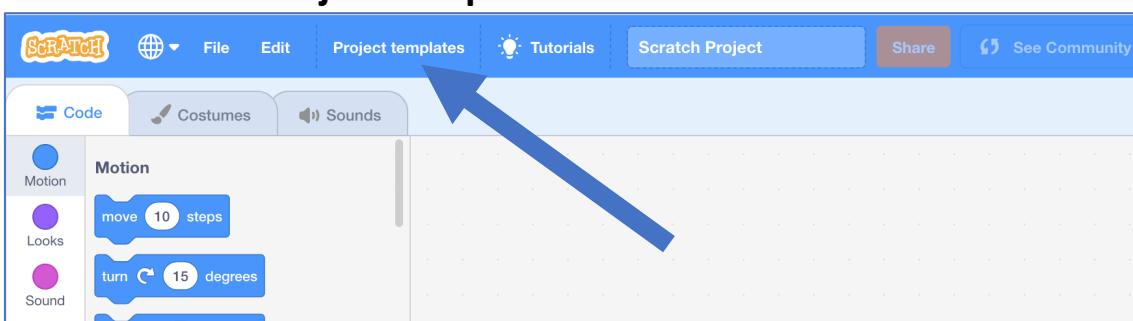
24. Click “Scratch 3”



25. Click on “Open in Scratch 3”



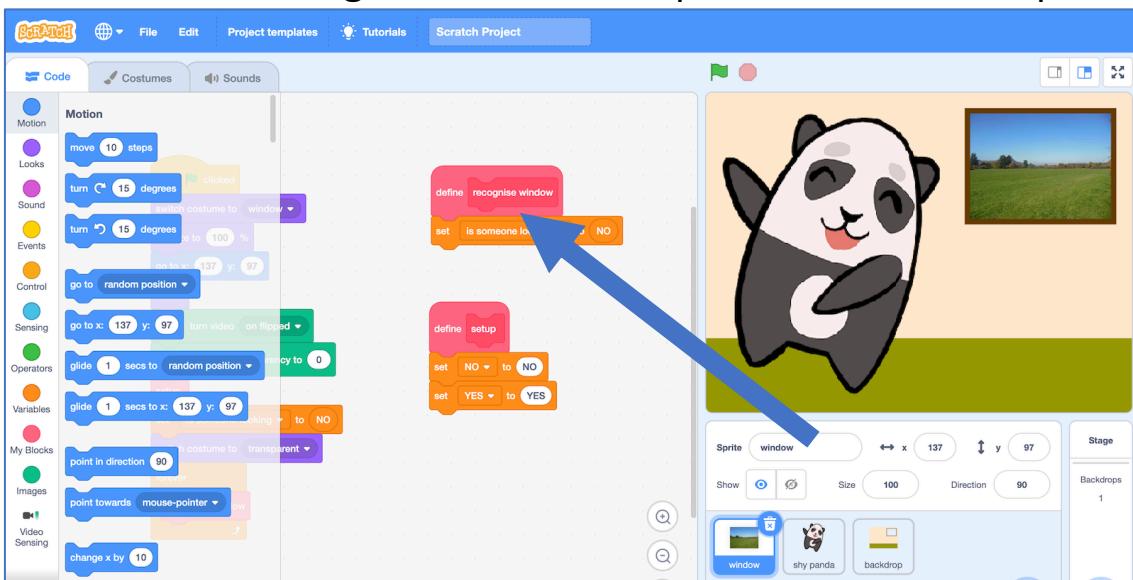
26. Click on “Project templates”



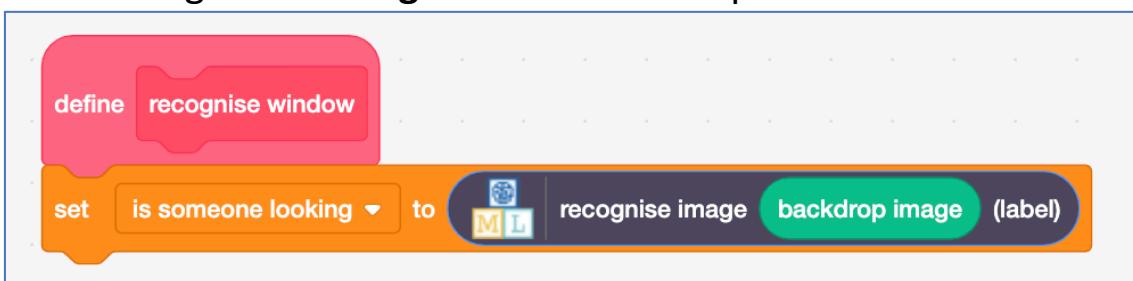
27. Click on the “Shy Panda” template

You might need to scroll down to it

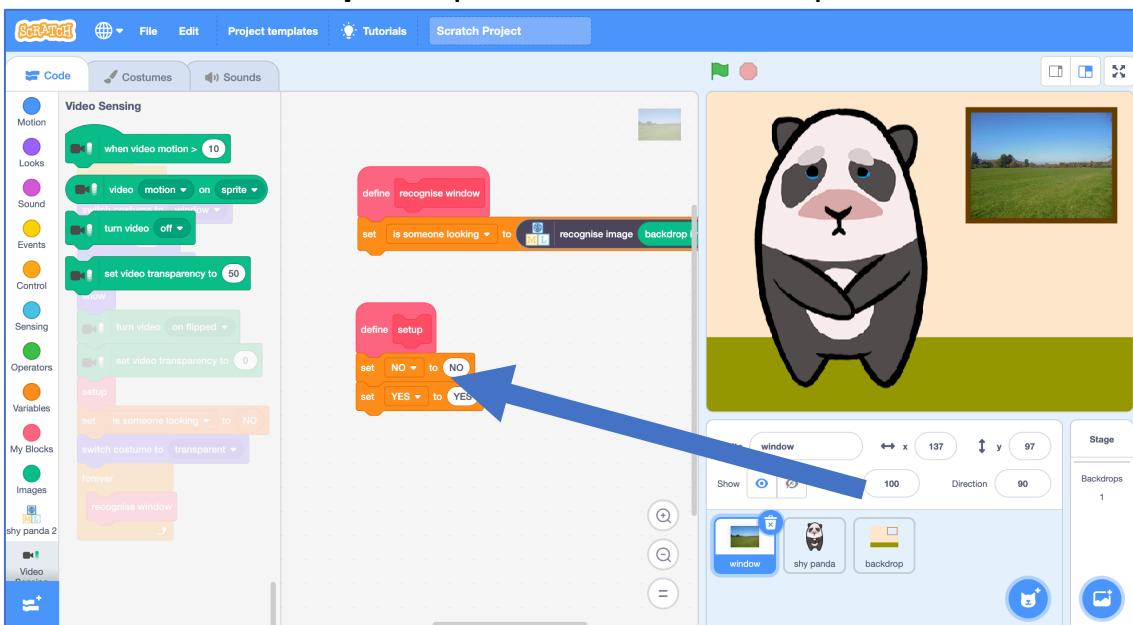
28. Find the “recognise window” script in the “window” sprite



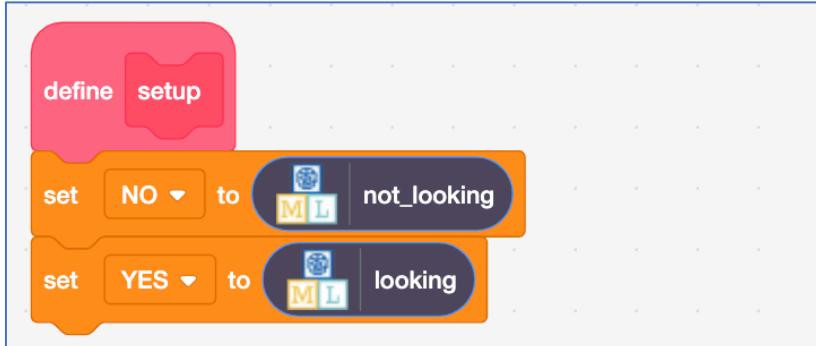
29. Change the “recognise window” script so that it looks like this



30. Find the “setup” script in the “window” sprite



31. Change the “**setup**” script so that it looks like this

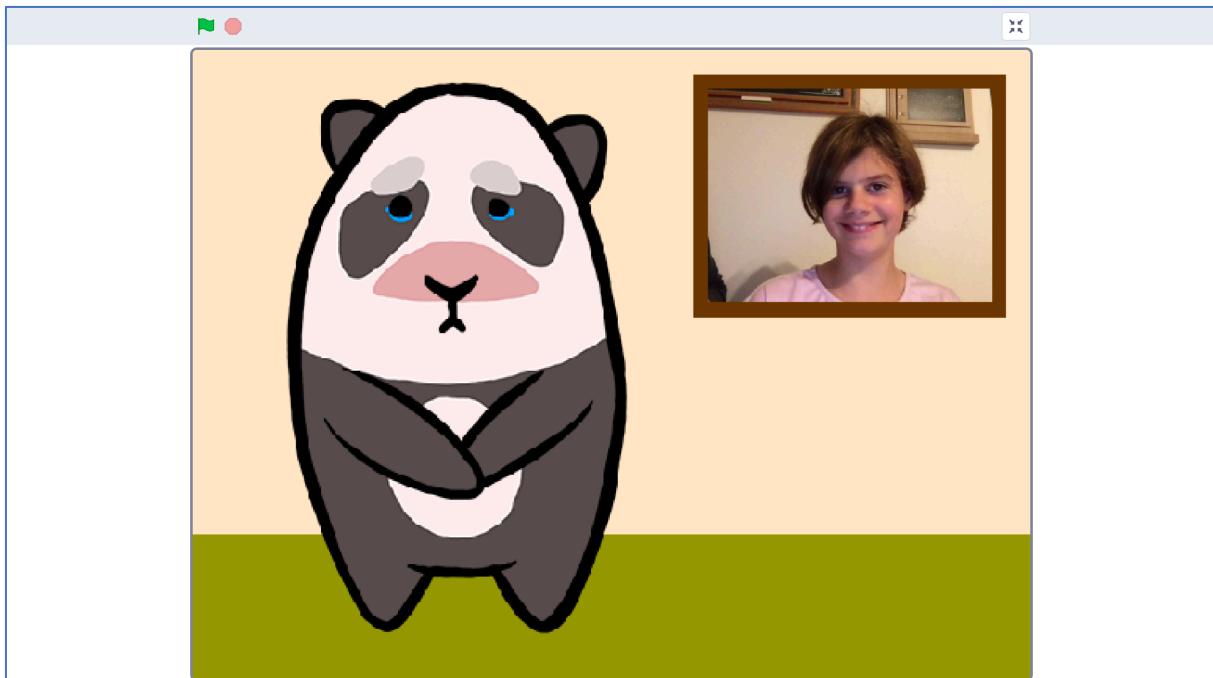


32. Click the **Green Flag** to start the panda dancing

33. You should see yourself in the window in the Scratch project.

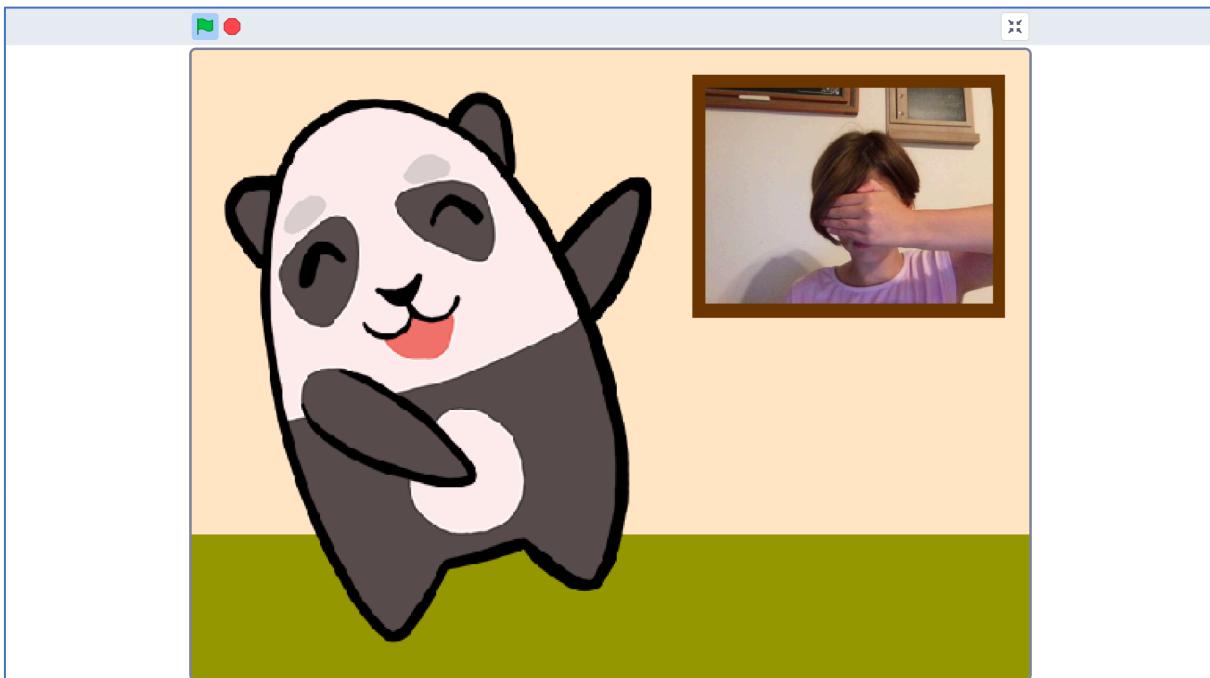
You might need to move so that your face is visible in the window.

If your machine learning model recognises the view in the window as “looking”, the panda should stop dancing and look embarrassed!



34. Try covering your face.

The panda should start dancing again, as your machine learning model will recognise that you're not looking.



What have you done?

You've created a shy panda in Scratch that uses machine learning to recognise whether the view at the window is a picture of you looking in.

The machine learning model that you've trained is an image classifier, that is able to classify photos as one of two classes – either looking or not looking.

The more examples you give it, the better it should get at recognising whether or not you're looking at it.

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?

Draw your own character

You don't have to use the panda in the project template. Why not draw your own character? You'll need two sprites to be able to animate it dancing, and a third sprite of it looking shy.

Improving your training

Try testing it with your classmates. Does the panda still behave correctly?

What about if there's no one there at all?

How can you improve the training so that the panda does the right thing for these sorts of cases?