

Shy Panda

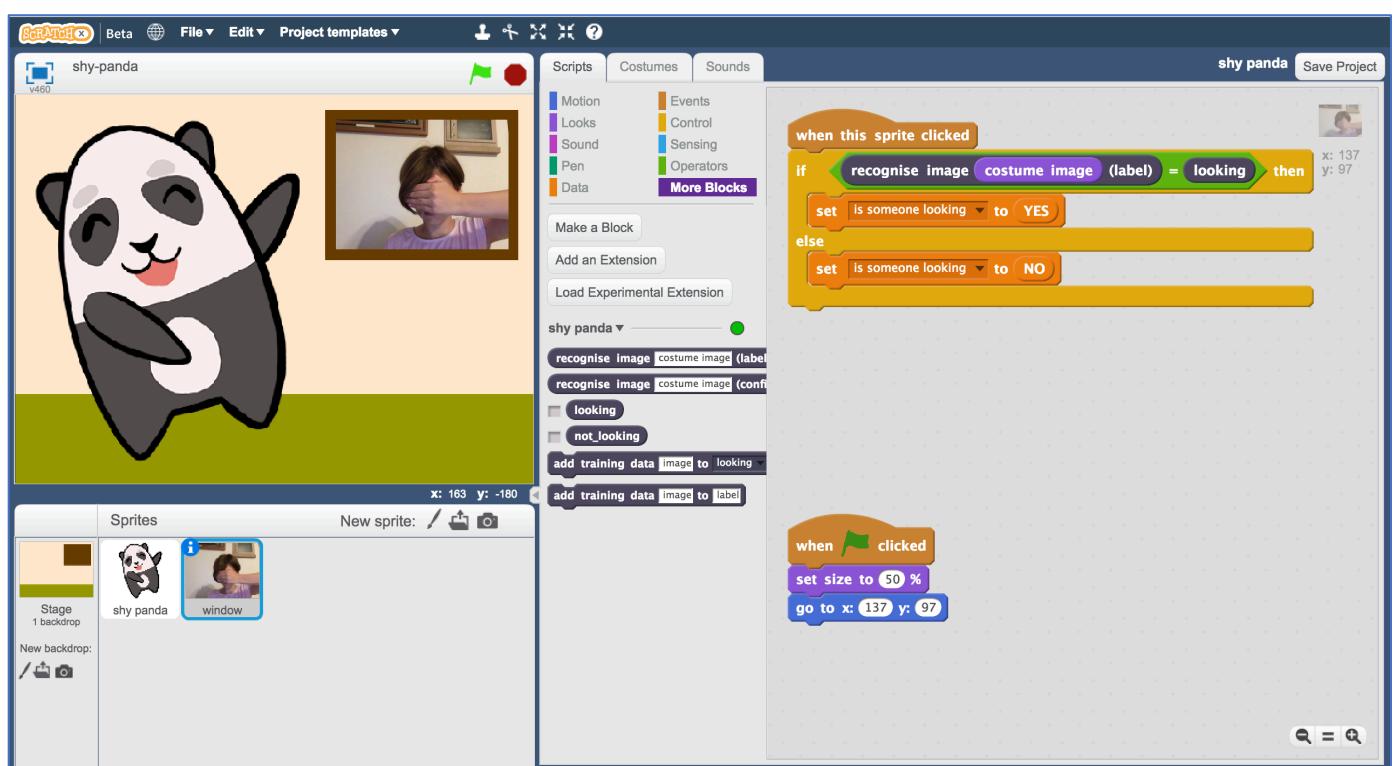
In this project you will make a dancing panda.

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.



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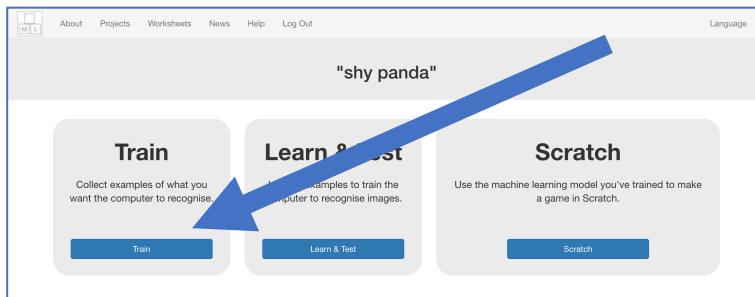
1. Go to <https://machinelearningforkids.co.uk/> in a web browser
2. Click on “Get started”
3. Click on “Log In” and type in your username and password
If you don't have a username, ask your teacher to create one for you.
If you can't remember your password, ask your teacher to reset it for you.
4. Click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

The screenshot shows a web-based form for creating a machine learning project. At the top, there's a navigation bar with links for About, Projects, Worksheets, News, Help, Log Out, and Language. Below the navigation is a title "Start a new machine learning project". The main area has two input fields: "Project Name *" containing "shy panda" and "Recognising *" containing "images". To the right of the "Recognising" field is a tooltip box with the following text:
 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"
 At the bottom right of the form are two buttons: "CREATE" and "CANCEL".

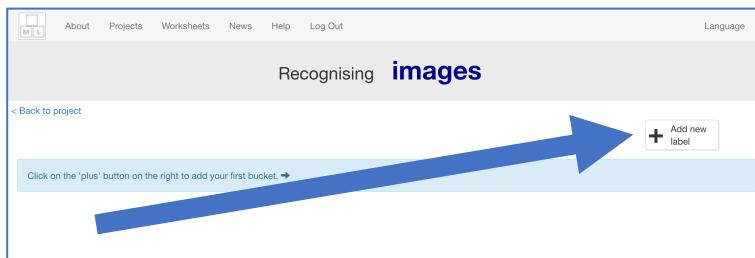
7. You should see “shy panda” in the list of your projects. Click on it.

The screenshot shows a list of machine learning projects. The first project in the list is "shy panda", which is set to "Recognising images". A large blue arrow points to the "shy panda" project card. Other projects listed include "face lock", which is set to "Recognising images as Granted or denied". Each project card has a delete icon to its right.

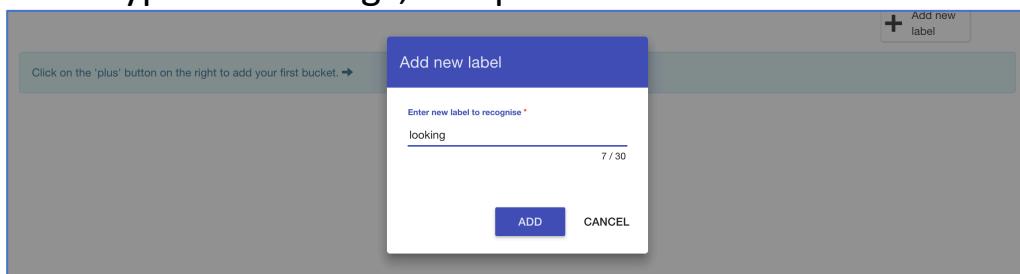
8. Click the Train button



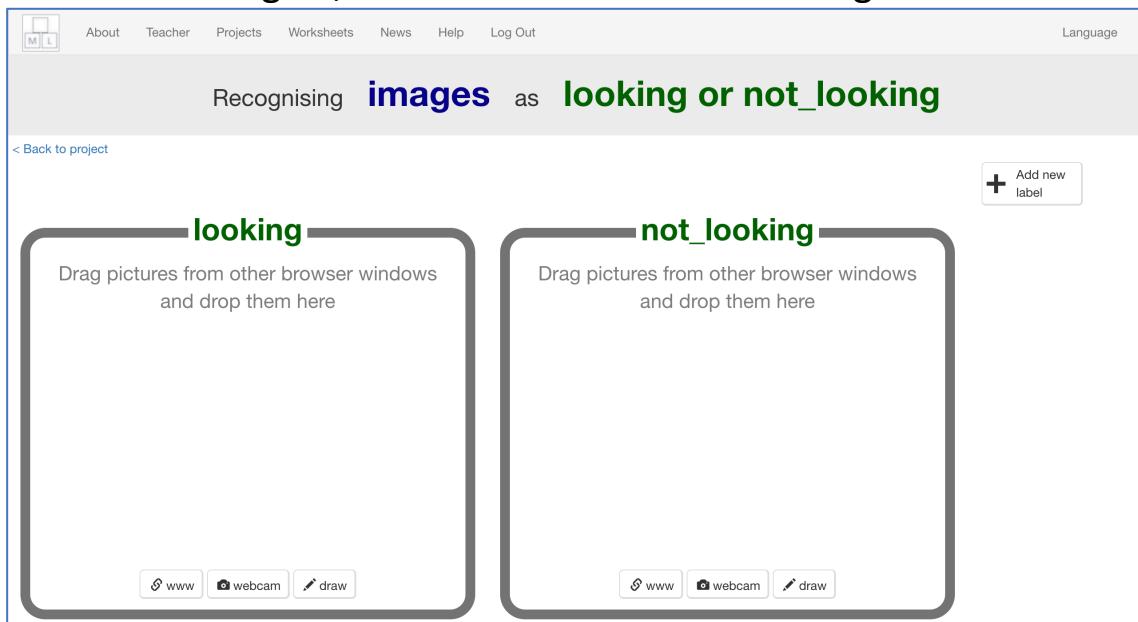
9. Click "+ Add new label"



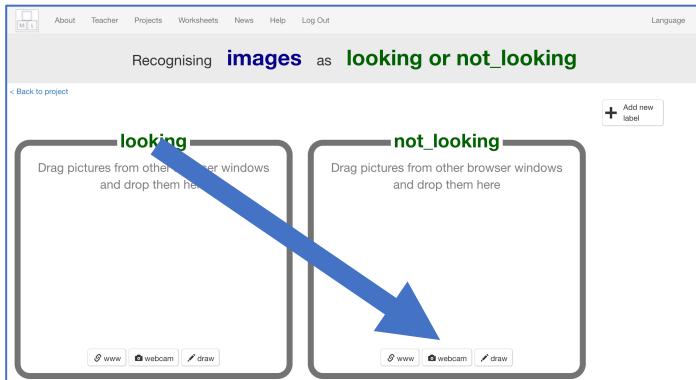
10. Type in "looking", and press Add



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

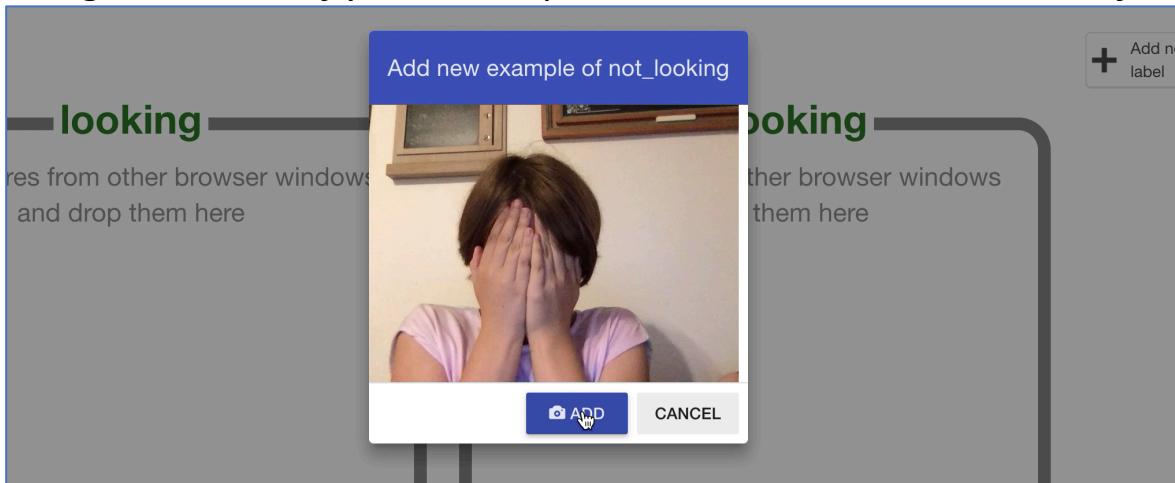


12. Click on the “webcam” button in the “not looking” bucket

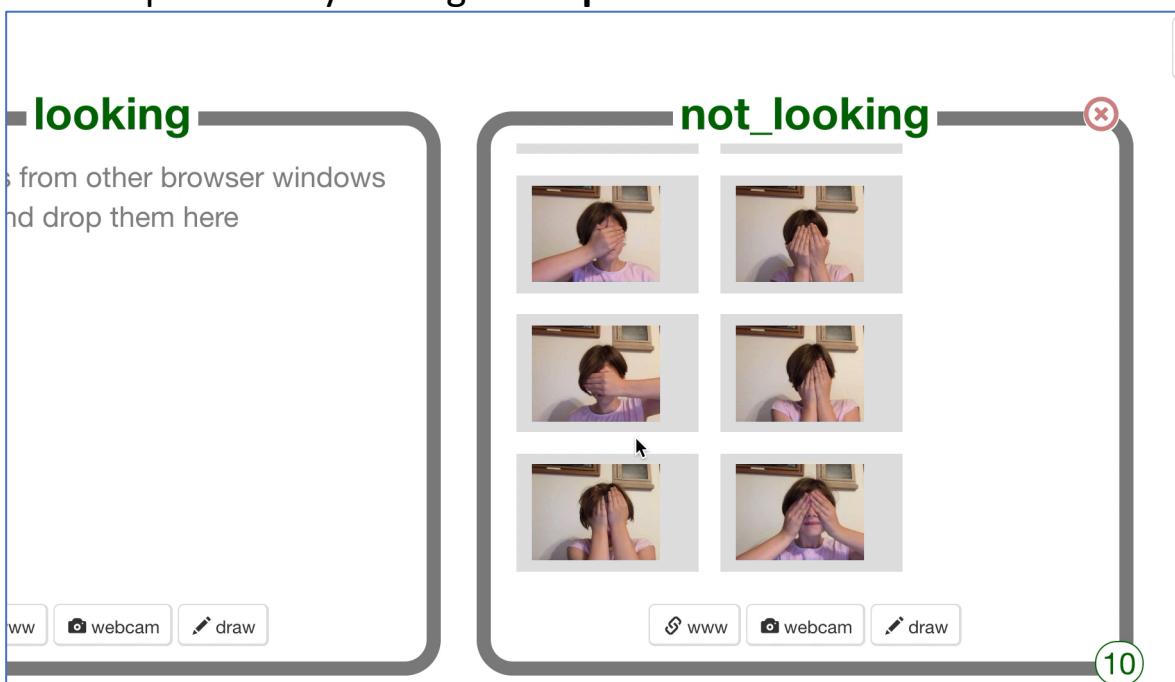


13. Cover your face with your hands, and take a photo

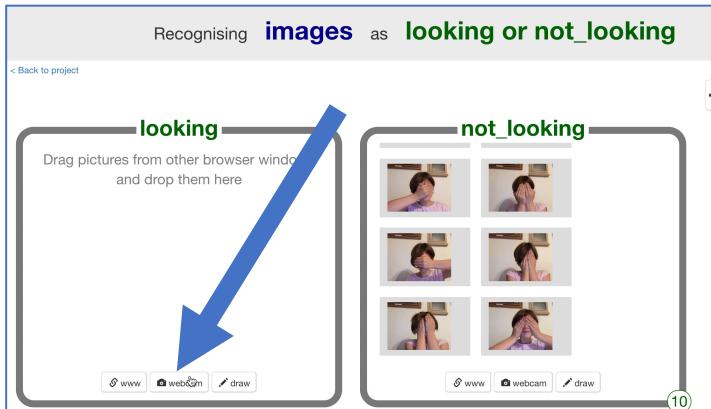
It might be easier if you have a partner to click the “Add” button for you!



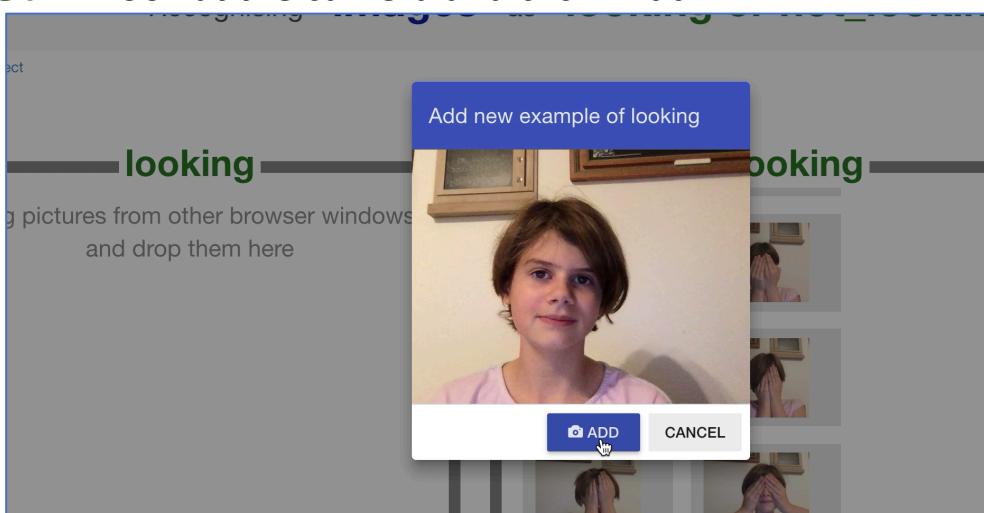
14. Repeat until you've got ten photos like this



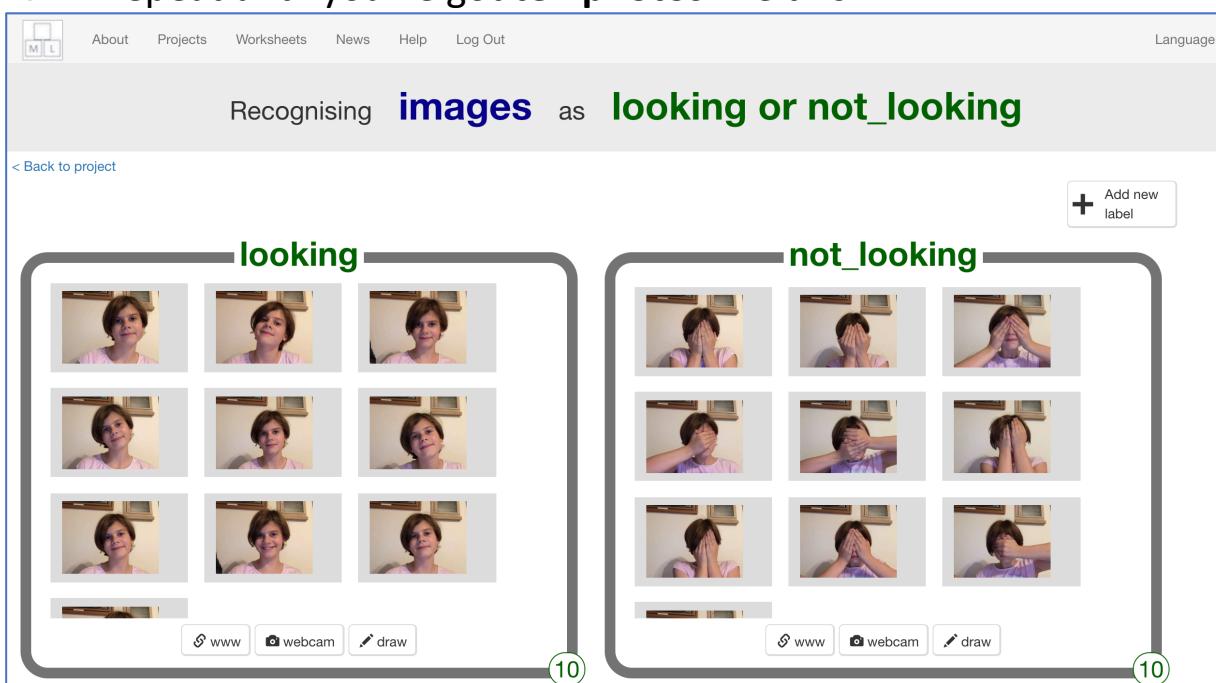
15. Click the “webcam” button in the “looking” bucket



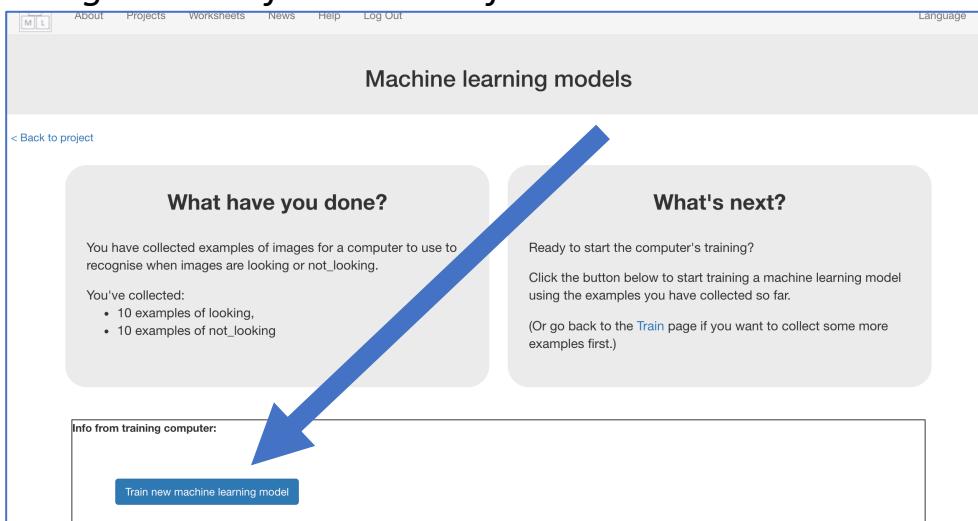
16. Look at the camera and click “Add”



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



- 18.** Click “< Back to project”
- 19.** Click **Learn & Test**
- 20.** Click the “**Train new machine learning model**” button
It might take a few minutes for the model to train.



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.

- 21.** Click “< Back to project”
- 22.** Click **Scratch**

23. Click on Open in Scratch

Using machine learning in Scratch

< Back to project

Open in Scratch 

Your project will add these blocks to the **More Blocks** tab in Scripts.

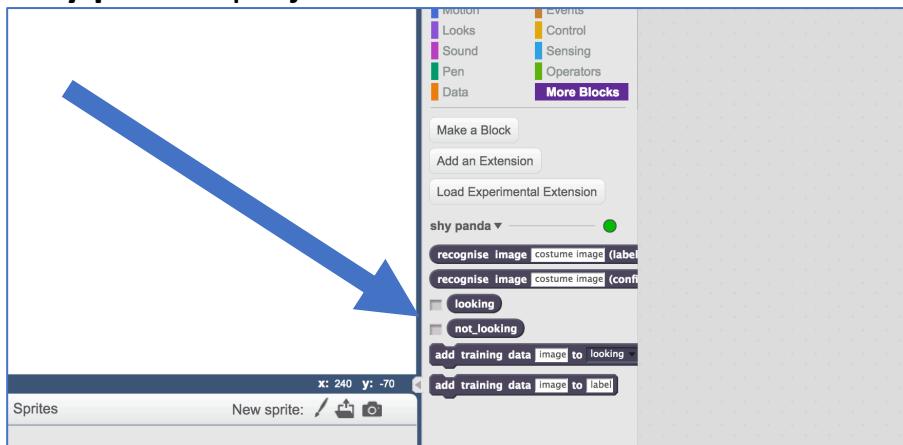
recognise images [costume image] (label)
Put images in the input for this, and it will return the label that your machine learning model recognises it as.

recognise images [costume image] (confidence)
This will return how confident your machine learning model

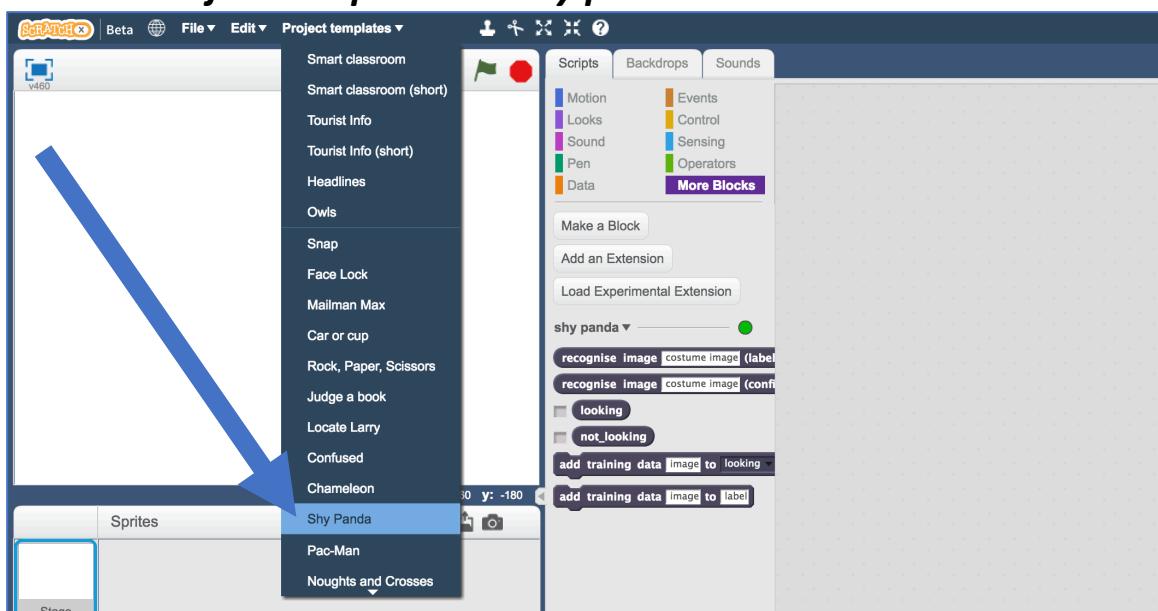
It will look something like this - except with the name of your project.



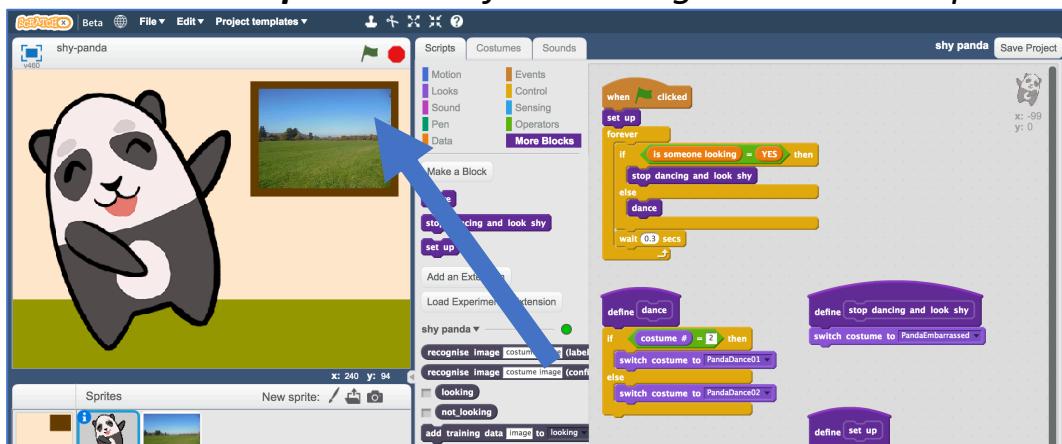
24. You should see new blocks in the “More blocks” section from your “shy panda” project.



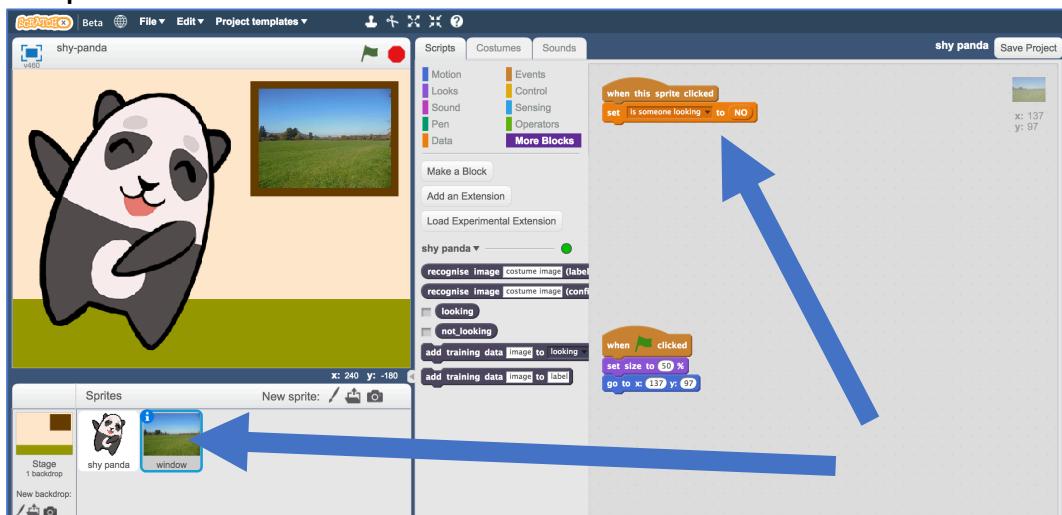
25. Open the project template *Click on Project templates -> Shy panda*



26. Click on the Green Flag to see the panda dance!
Click the red stop button before moving to the next step.



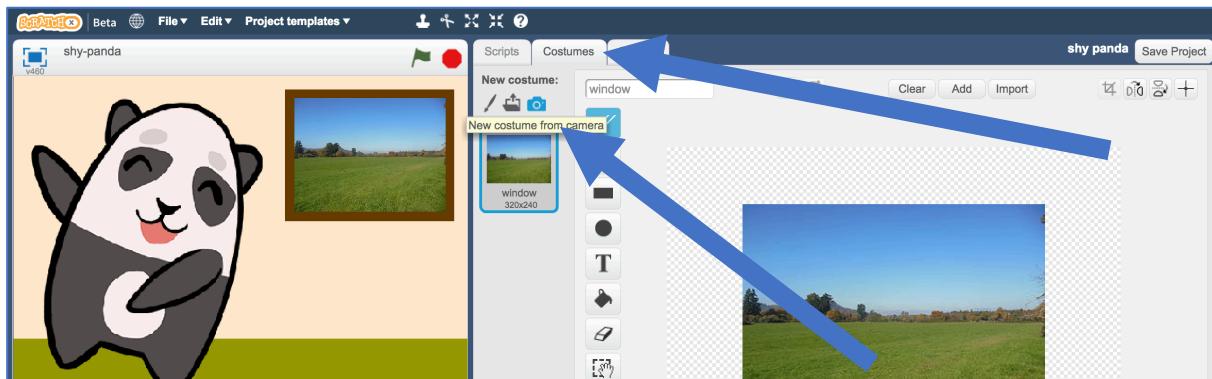
27. Click on the **window** Sprite and find the “when this sprite clicked” script



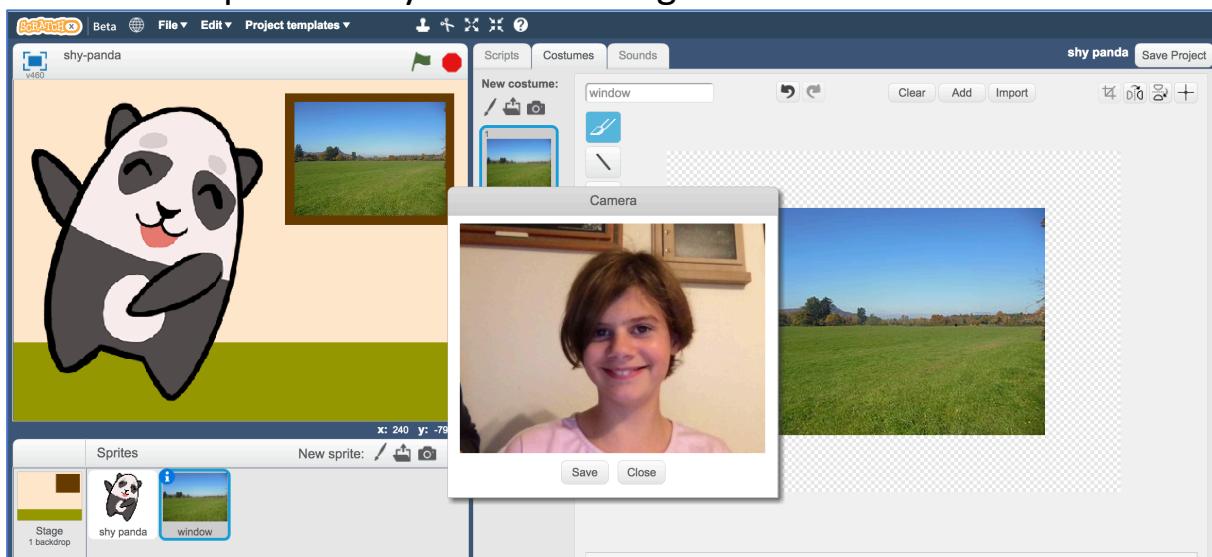
28. Modify the script so that your machine learning model is used to tell if someone is looking at the window



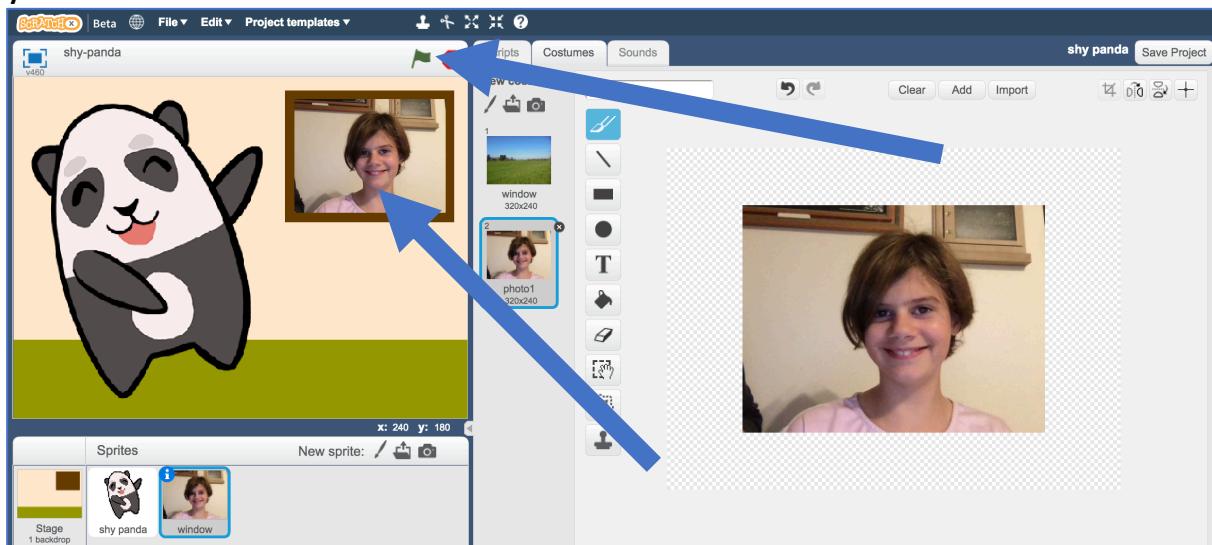
- 29.** Click on the “Costumes” tab and then click the webcam button “New costume from camera”



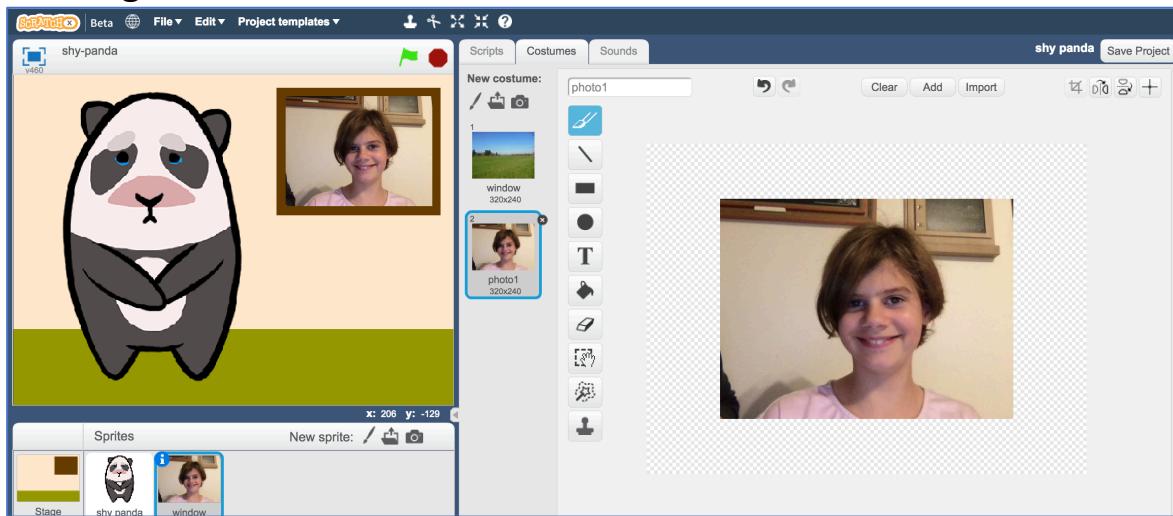
- 30.** Take a picture of yourself looking in at the window



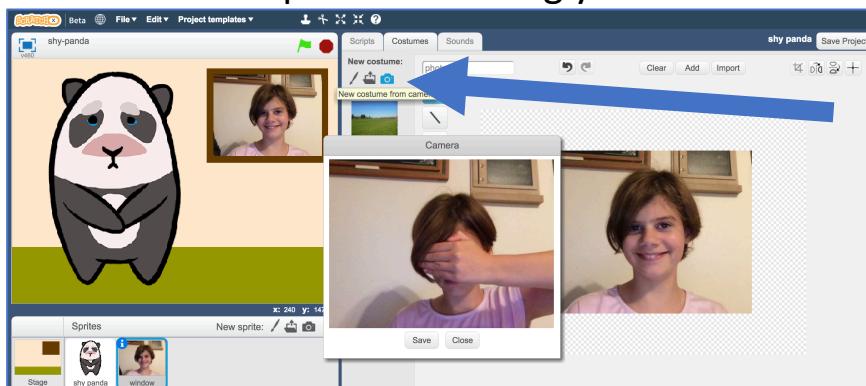
- 31.** Click the Green Flag, and once the panda starts dancing, click on your face in the window.



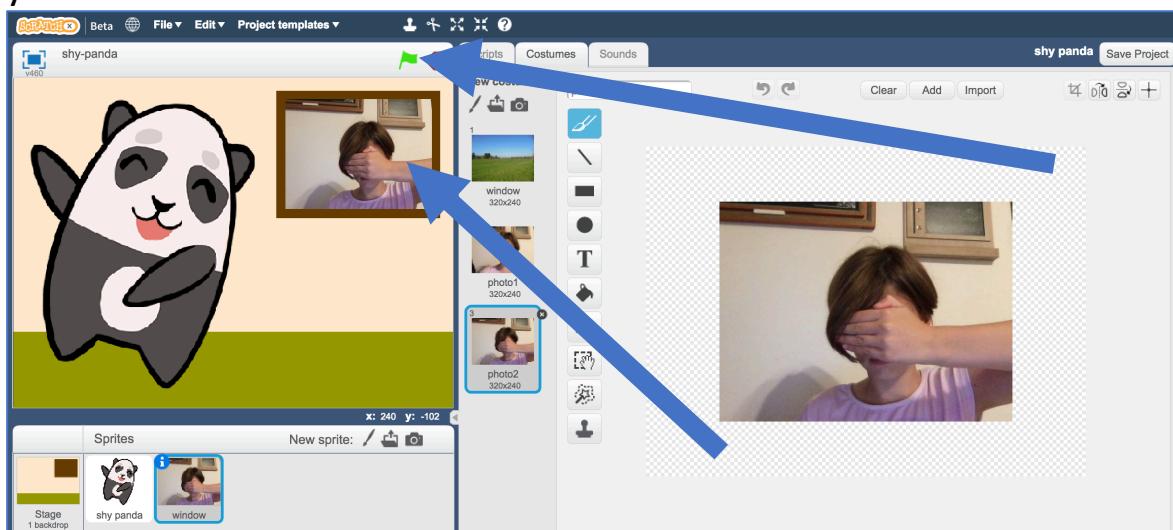
32. Once the panda recognises that you're looking at it, it'll stop dancing and look embarrassed.



33. Click the webcam “**New costume from camera**” button again, and this time take a picture covering your face.



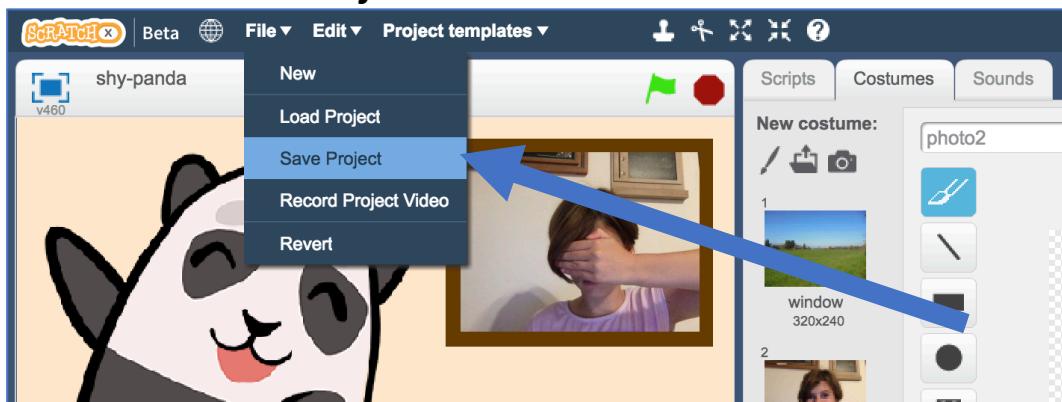
34. Click the **Green Flag**, and once the panda starts dancing, click on your face in the window.



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

36. Save your project

Click File -> Save Project



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?