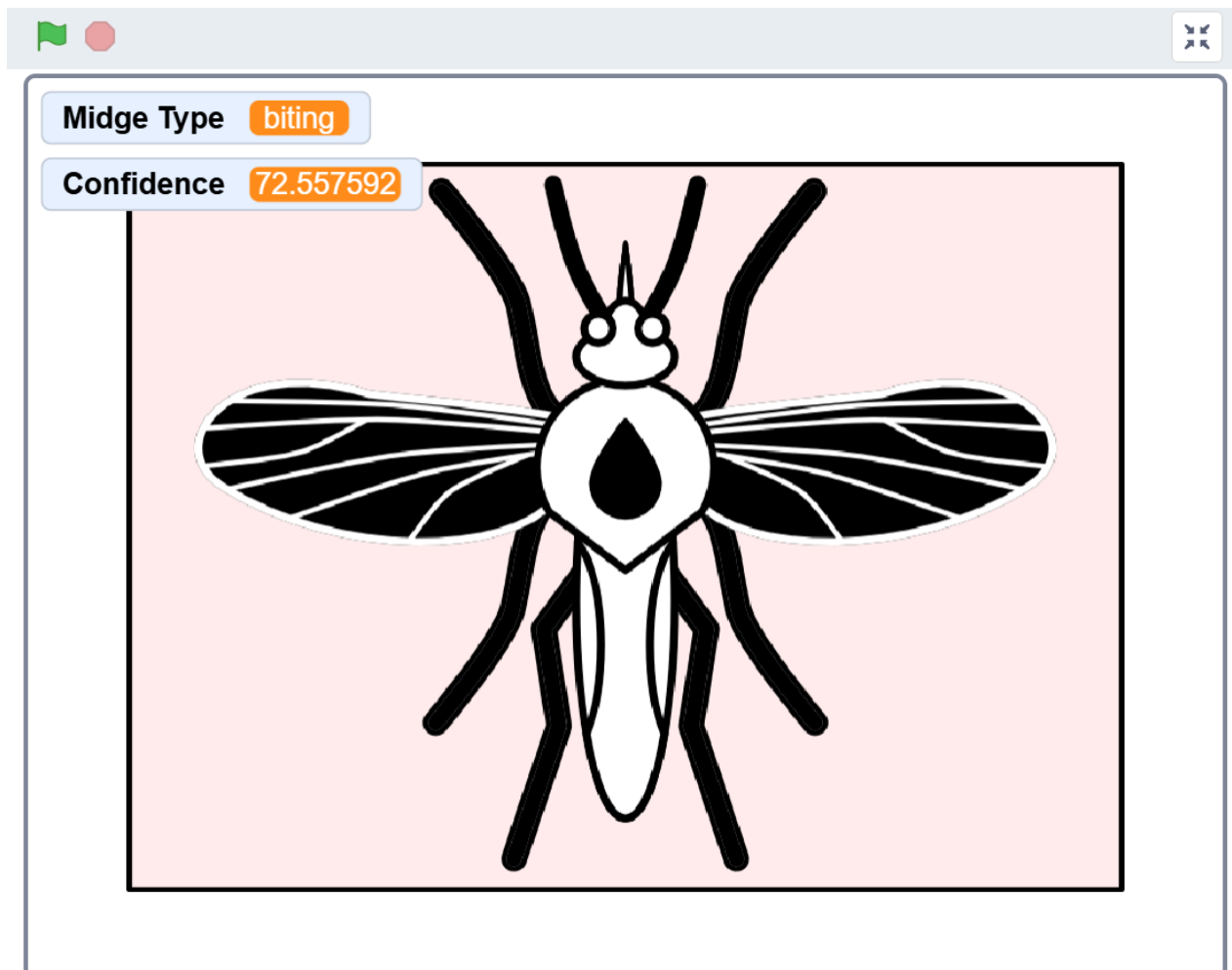




# Midge – Biting or Non-Biting?

In this project you will make a Scratch project that learns to classify images of midges as either **biting** or **non-biting**.

You will train the computer to be able to recognise biting and non-biting midges and your project will report how confident the model is in its classification.



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1. Go to <https://machinelearningforkids.co.uk/>
2. Click on “**Get started**”
3. If you have an account, click on “**Log In**” and type in your username and password  
*If you don't have an account you can Try it now with registering.*
4. Click on “**Projects**” on the top menu bar
5. Click the “**+ Add a new project**” button.
6. Name your project “Midge Project - Images” and set it to learn how to recognise “**images**”. Choose to store “In your web browser”.

Start a new machine learning project

Project Name \*

Midge Project - Images

Give your project a name to describe what sort of thing you'll try to teach the computer to recognise.

Project Type \*

recognising images

Storage \*

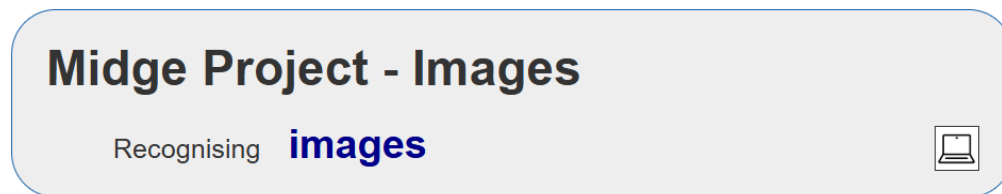
In your web browser

CREATE

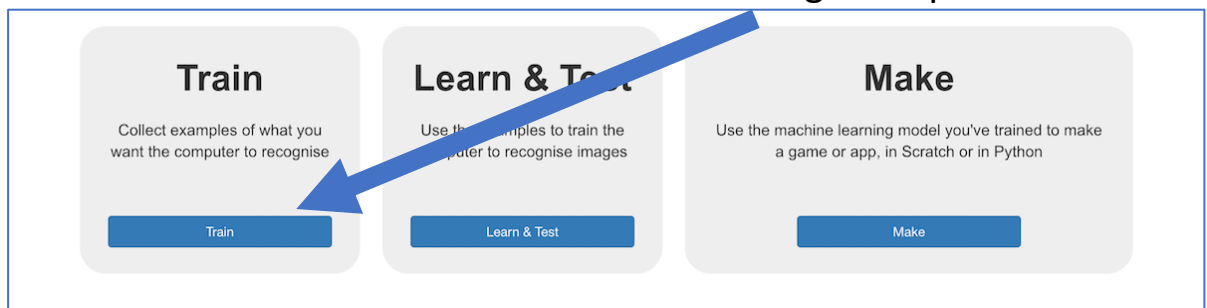
CANCEL

7. Click the “**Create**” button

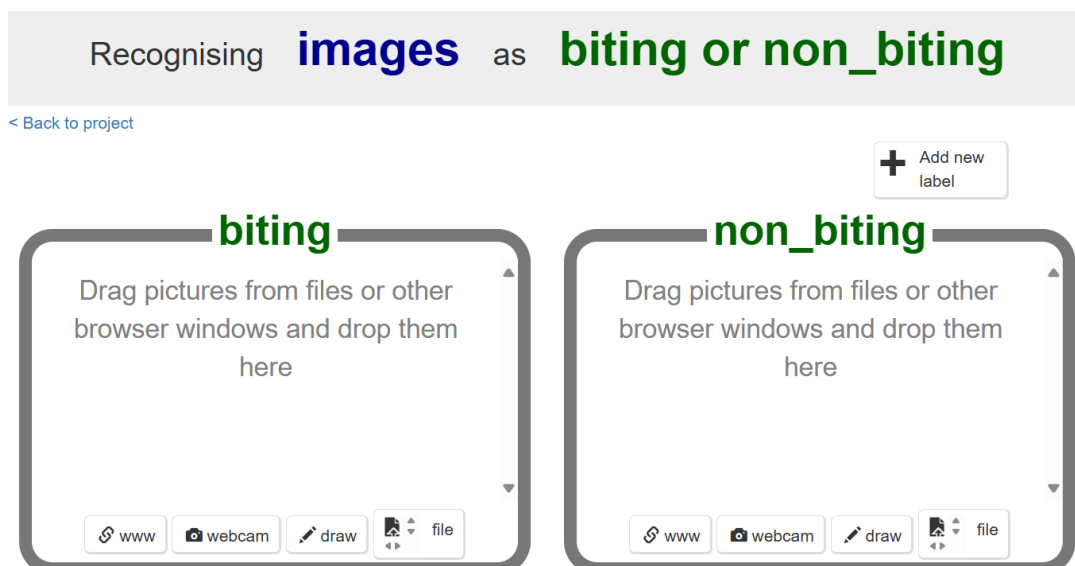
8. You should now see “**Midge Project - Images**” in the list of your projects. Click on it.



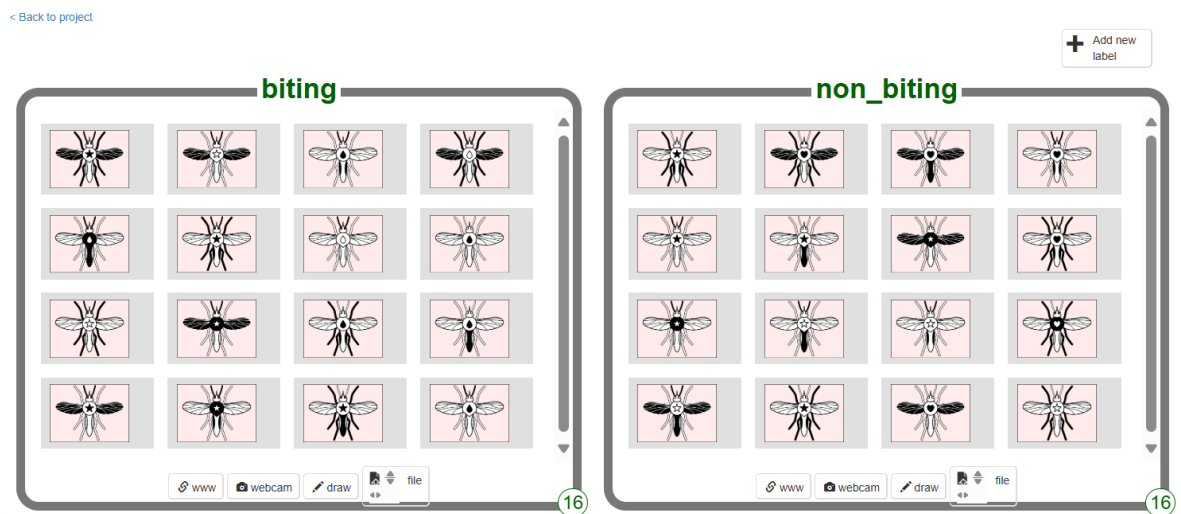
9. Click the “**Train**” button to start collecting examples.



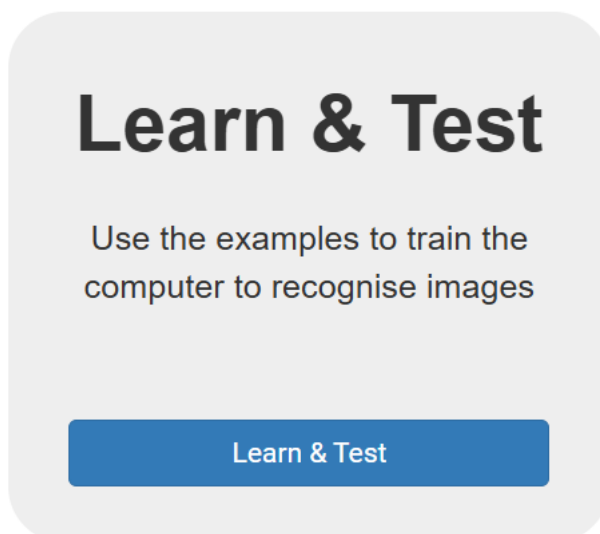
10. Click on “+ Add new label” and call it “biting”.  
Do that again, and create a second bucket called “non-biting”



11. In the “biting” bucket, click on “file”.
12. Locate your 16 images of **biting** midges and upload them.
13. Repeat the process to upload 16 images of non-biting midges.



- Click the “< **Back to project**” link.
- Click the “**Learn & Test**” button



## 16. Click the “Train new machine learning model” button

The screenshot shows the 'Machine learning models' page. At the top, there is a navigation bar with links: About, Teacher, Projects, Worksheets, Pretrained, Stories, Book, Help, Log Out, and a Language selector. Below the navigation bar, the page title 'Machine learning models' is centered. A '< Back to project' link is on the left. The main content area is divided into two columns. The left column, titled 'What have you done?', contains text about collecting examples and a list: 'You've collected: 16 examples of biting, 16 examples of non\_biting'. The right column, titled 'What's next?', contains text about starting training and a button 'Train new machine learning model'. A large blue arrow points from the 'Train new machine learning model' button in the right column to the 'Train new machine learning model' button in the left column. Below the columns, there is a section titled 'Info from training computer:' containing the 'Train new machine learning model' button.

## 17. Wait for the training to complete.

The screenshot shows the 'Machine learning models' page after training. The 'What have you done?' column now includes the text 'You have trained a machine learning model to recognise when images are biting or non\_biting.' and 'You created the model on Monday, February 24, 2025 5:59 PM.' The 'What's next?' column includes text about testing the model and a button 'Train new machine learning model'. Below the columns, there is a section titled 'Try putting in an image to see how it is recognised based on your training.' containing three buttons: 'Test with webcam', 'Test by drawing', and 'Test with www'. Below this, there is a section titled 'Info from training computer:' containing the text 'Model started training at: Monday, February 24, 2025 5:59 PM' and 'Current model status: Available'. There are also buttons 'Delete this model' and 'Train new machine learning model'.

## 18.

### What have you done so far?

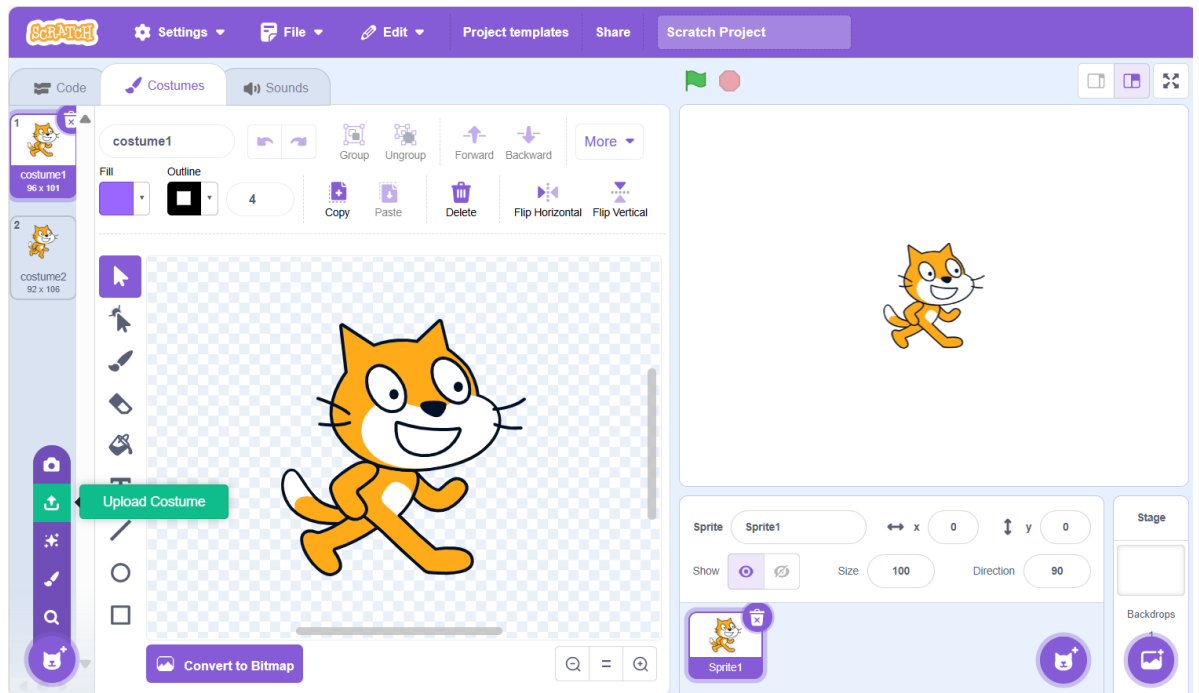
You've started to train a computer to recognise pictures of biting and non-biting midges. Instead of writing rules to do this, you are doing it by collecting examples. These examples are being used to train a machine learning "model".

This is called "supervised learning" because of the way you are supervising the computer's training.

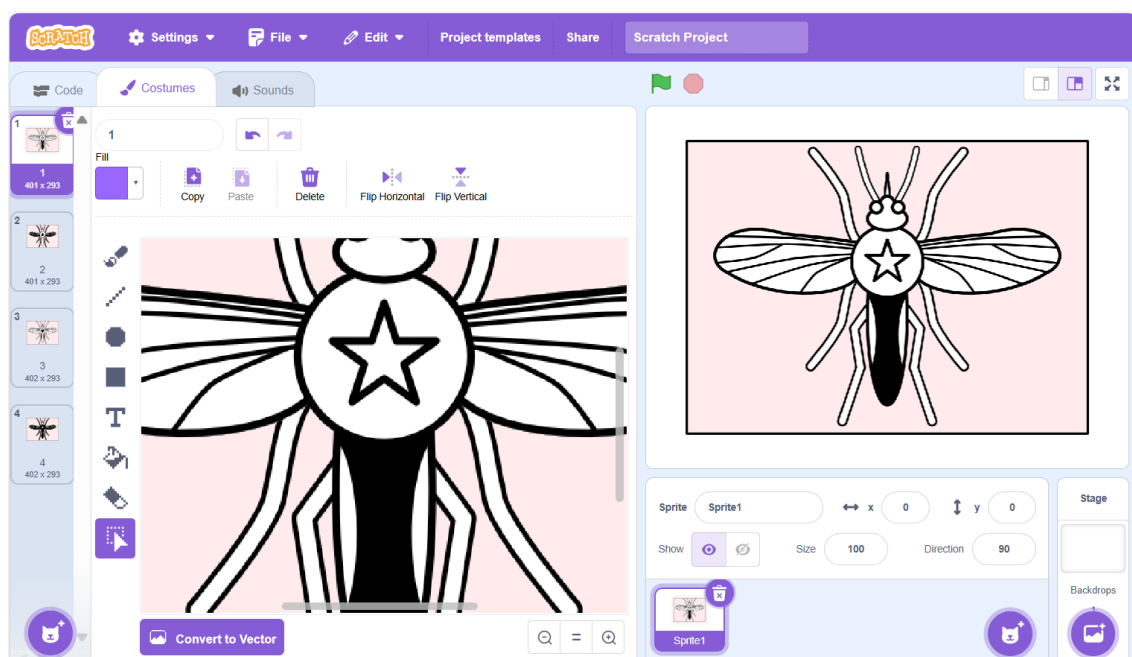
The computer will learn from patterns in the example images that you have uploaded, such as the features and colour (black or white). These will be used to be able to recognise new midge images.

19. Click the "< Back to project" link
20. Click the "Make" button, and then the "Scratch 3" button.
21. Click the "Open in Scratch 3" button

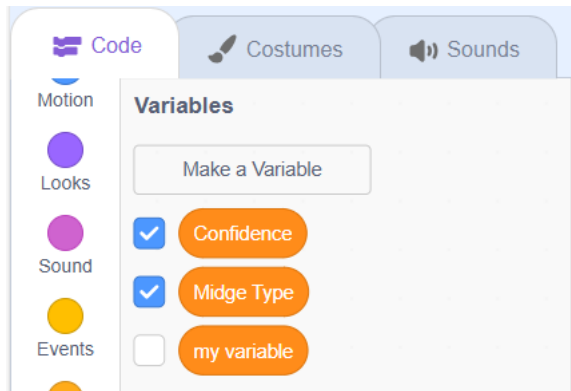
22. Click on the Cat sprite (Sprite1) and select Costumes tab.
23. Click on Choose a Costume > Upload Costume



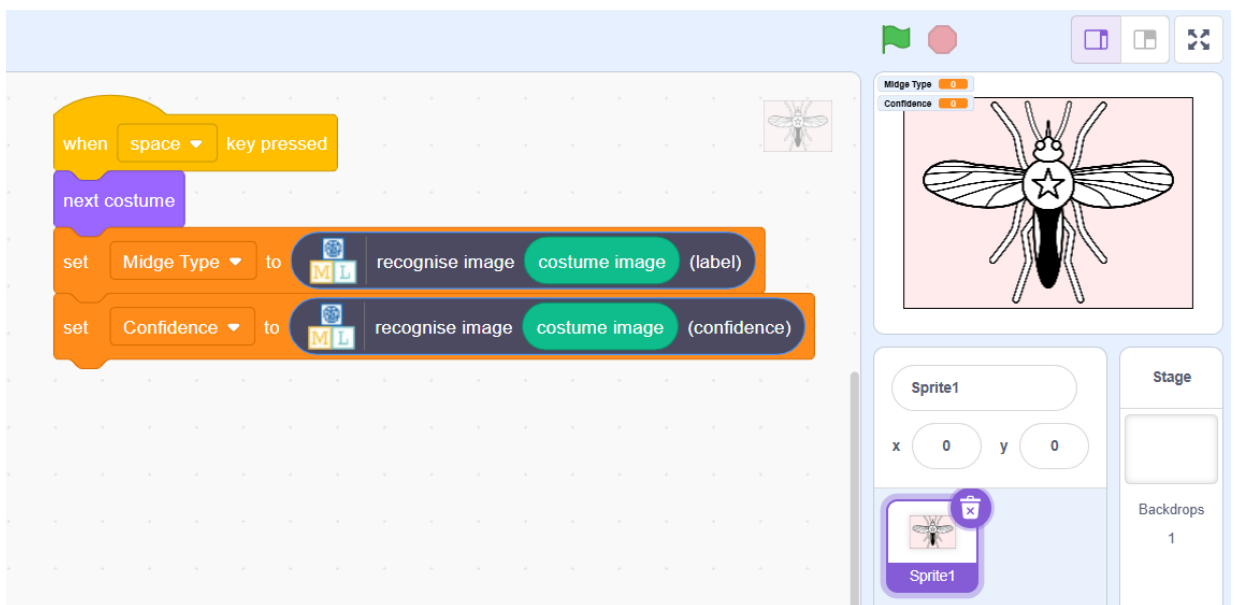
24. Locate and upload test images 1.png, 2.png, 3.png, 4.png
25. Delete cat costumes costume1 and costume2



- 26.** Click on Code tab and make 2 variables called “Midge Type” and “Confidence”

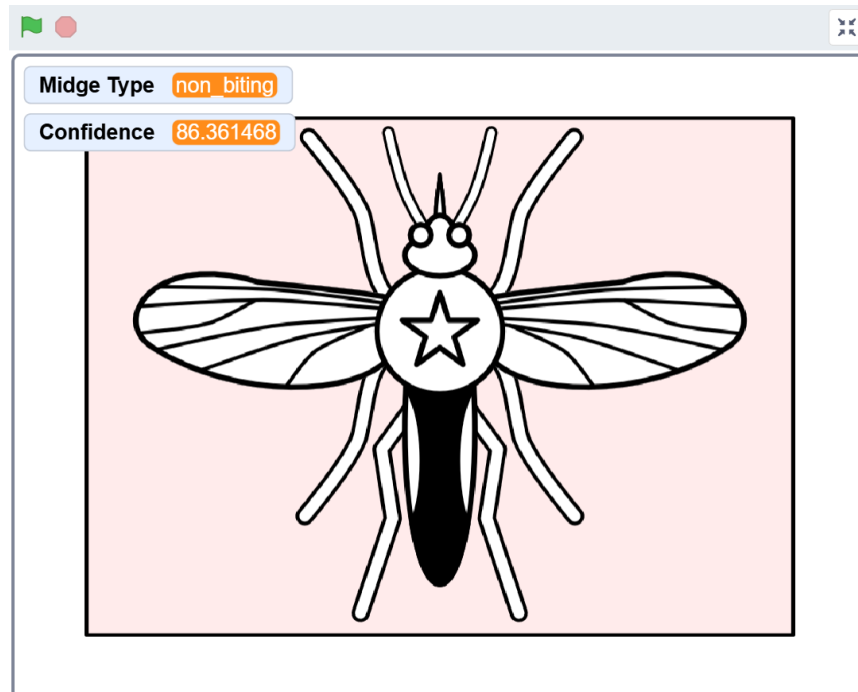


- 27.** Add the following code to Sprite1





**28.** Now test your model! Press the space bar to see if your model can recognise biting vs. non-biting midges.



**29.**

### What have you done?

You've used machine learning to create a midge image classification model.

Training the computer to be able to recognise images for itself is much, much quicker than trying to sort thousands of images manually.

The more examples you can give it, the better it should get at recognising images correctly.

How does your model compare to results below?

