



# What does Twitter think?

In this project you will use machine learning to estimate what people think about a topical issue of your choice.

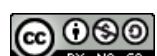
You'll train a machine learning model to recognise positive and negative comments about your topic, by collecting examples from social media.

You'll use your machine learning model in Scratch to analyze public discussion and represent this in a live graph.

The image shows a Scratch project titled "project-twitter". The stage features a blue cat sprite named "scratch-cat". The script area contains the following code:

```
when green flag clicked
    num = 0
    repeat (50)
        get tweet
        num + 1
        if opinion = like then
            broadcast like and wait
        else
            if opinion = dislikes then
                broadcast dislike and wait
            else
                broadcast neither and wait
        end
        change num by 1
        broadcast finished
```

The "Variables" palette shows a variable "num" set to 0. The "Costumes" palette has a costume for "scratch-cat". The "Sounds" palette shows a sound for the "finished" broadcast. The "Stage" palette shows the stage settings and a backdrop labeled "Backdrops 1".



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. Choose a topic that you'll use for the project

*In this project, you'll be analysing what people on Twitter think about something.*

*Choose something topical that you think people will be talking about. It could be a new movie, a TV show, or something that is in the news.*

**Check your idea with your teacher or group leader before continuing.**

*(For the rest of the screenshots in this worksheet, I'll be using Stormzy as I wrote this soon after Stormzy was announced as headlining the music festival Glastonbury).*

## 2. Go to <https://machinelearningforkids.co.uk/> in a web browser

### 3. Click on “Get started”

### 4. Click on “Log In” and type in your username and password

### 5. Click on “Projects” on the top menu bar

### 6. Click the “+ Add a new project” button.

### 7. Name your project “What does twitter think?” and set it to learn how to recognise “text”.

Click the “Create” button

The screenshot shows a web form titled "Start a new machine learning project". The "Project Name \*" field contains "What does twitter think?". The "Recognising \*" dropdown menu is open, showing "text" as the selected option. A tooltip provides information: "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'." The "Language" field is set to "English". At the bottom right are "CREATE" and "CANCEL" buttons.

Start a new machine learning project

Project Name \*

What does twitter think?

Recognising \*

text

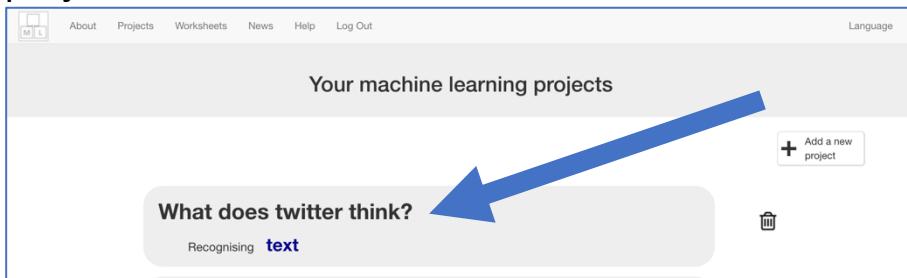
What type of thing do you want to teach the computer to recognise?  
For words, sentences or paragraphs, choose "text"  
For photos, diagrams and pictures, choose "images"  
For sets of numbers or multiple choices, choose "numbers"

Language

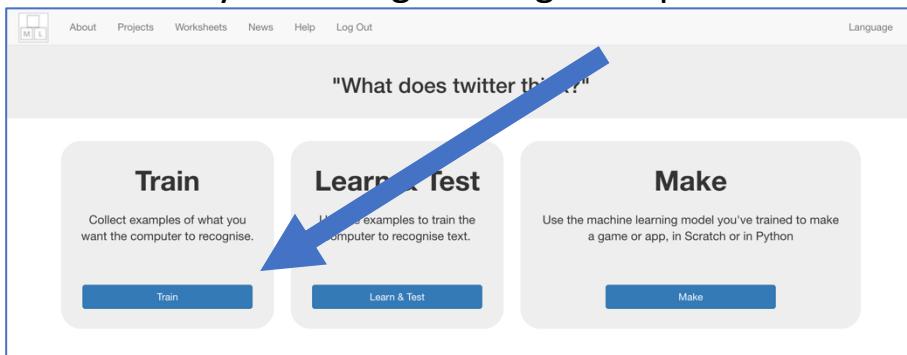
English

CREATE CANCEL

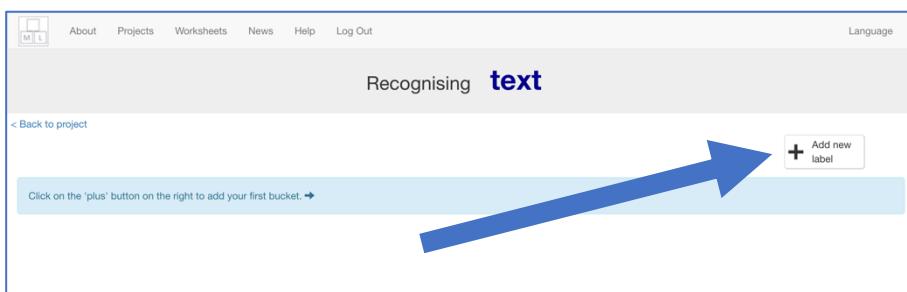
- 8.** You should now see “**What does twitter think?**” in the list of your projects. Click on it.



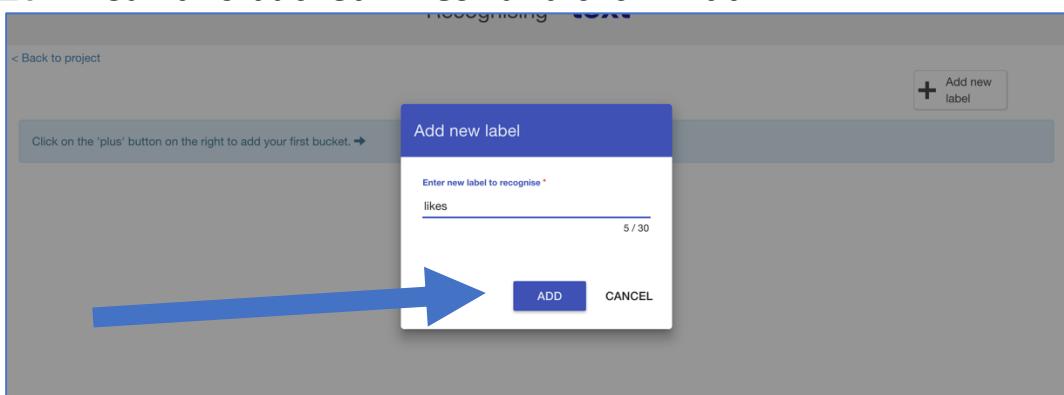
- 9.** Start by collecting training examples. Click “**Train**”



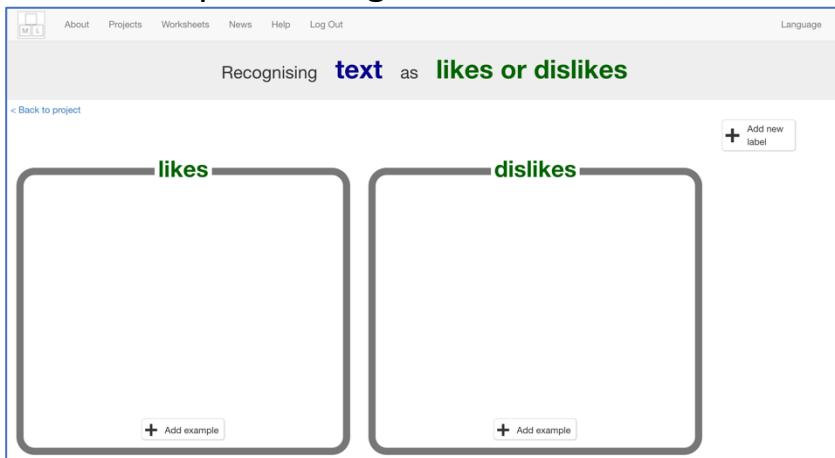
- 10.** First, create a space to store examples of positive comments. Click “**+ Add new label**”



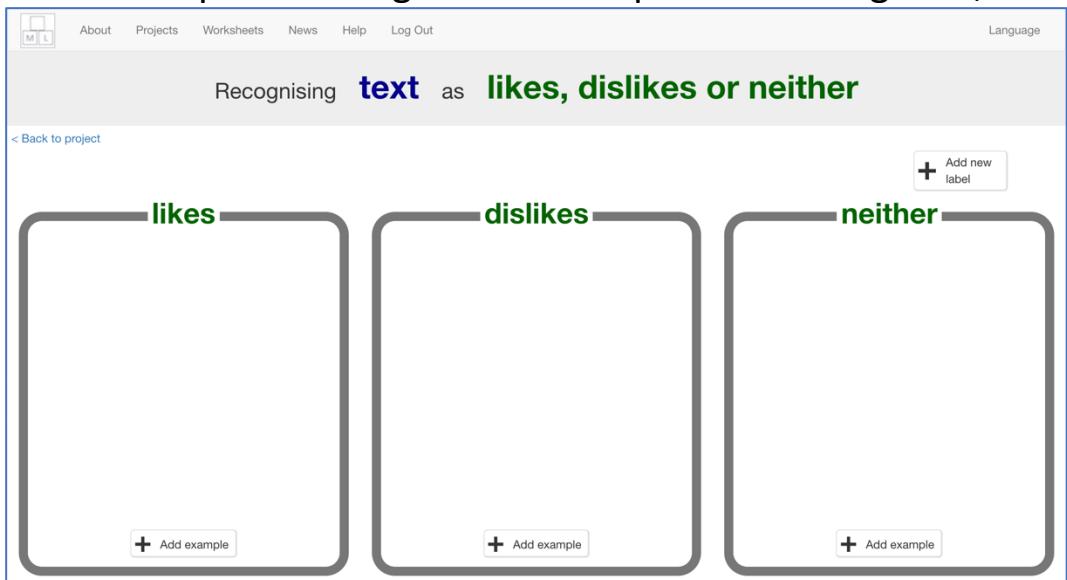
- 11.** Call this bucket “**likes**” and click “**Add**”



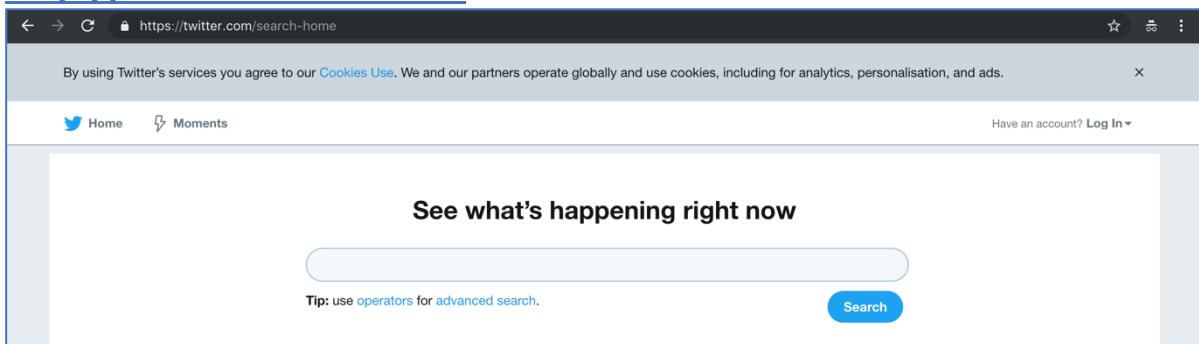
- 12.** Click the “+ Add a new label” button again, and create a space to store examples of negative comments, called “**dislikes**”



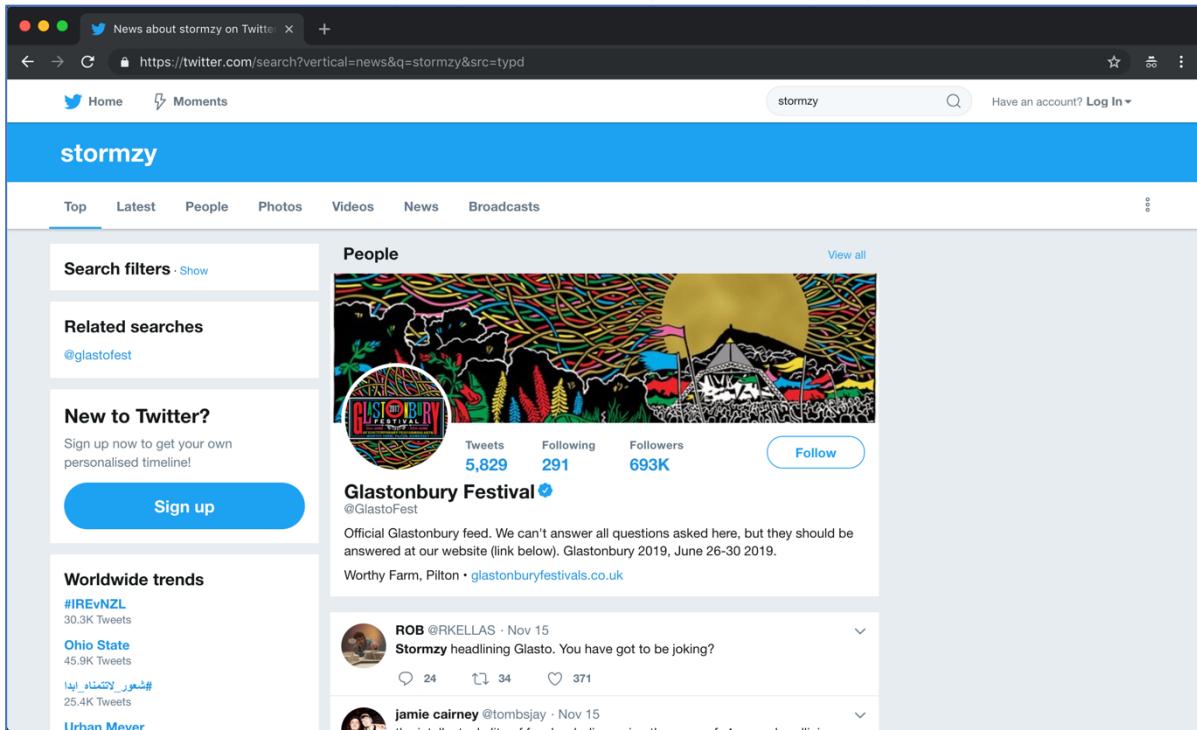
- 13.** Click the “+ Add a new label” button again, and create a space to store examples of things that aren’t positive or negative, called “**neither**”



- 14.** Open a new web browser window and go to  
<http://search.twitter.com>



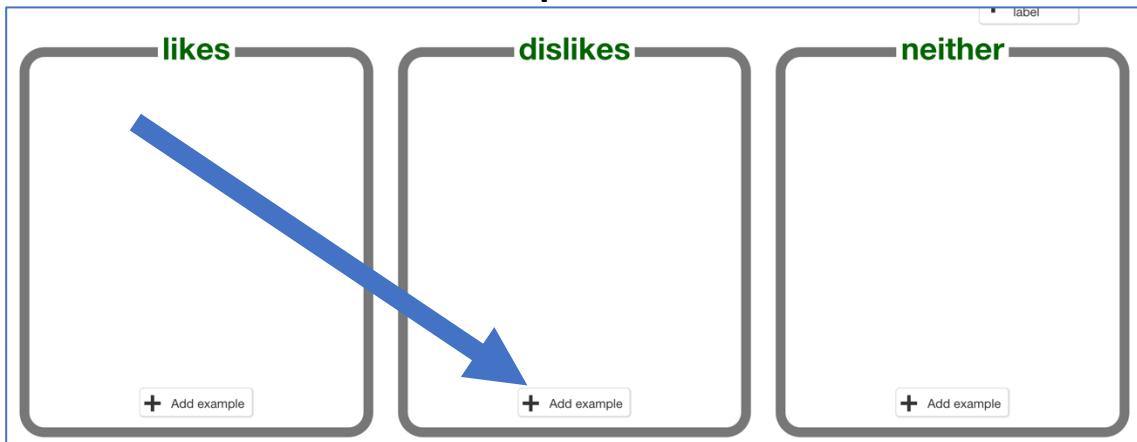
## 15. Search for the topic you're using for this project



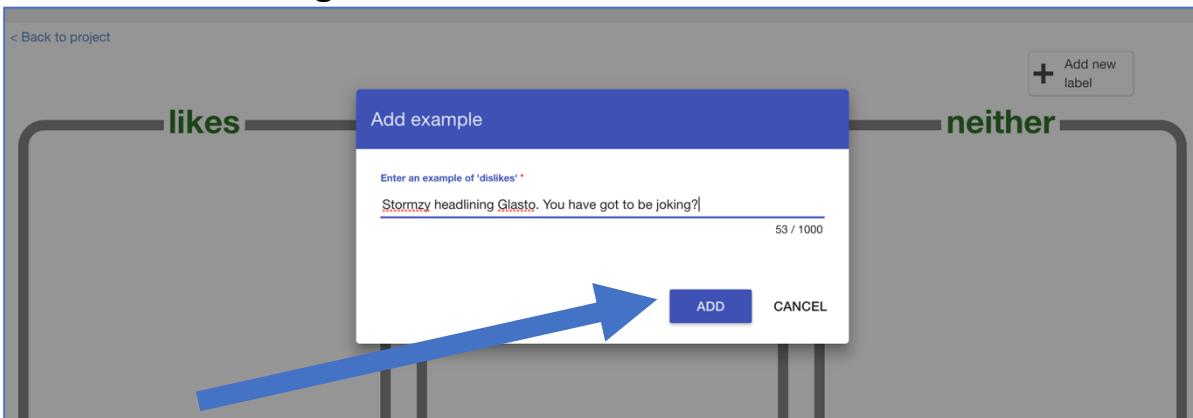
## 16. Find an example of someone saying something negative about your topic, and copy it to the clipboard



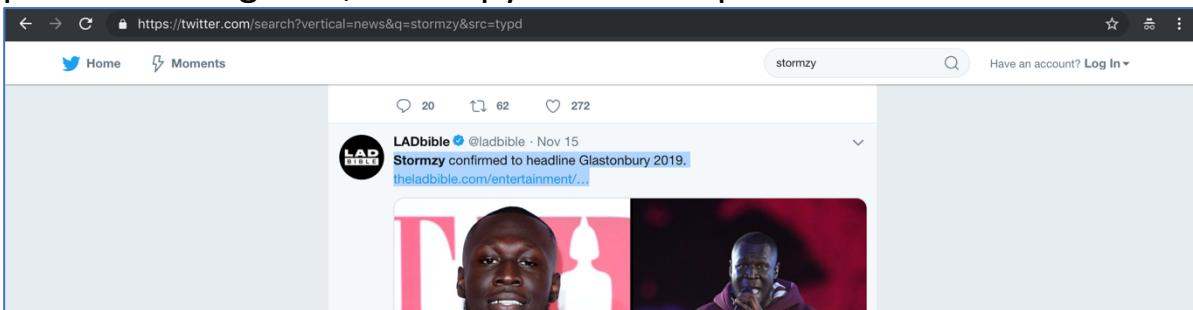
## 17. Click on the “+ Add example” button in the “dislikes” bucket



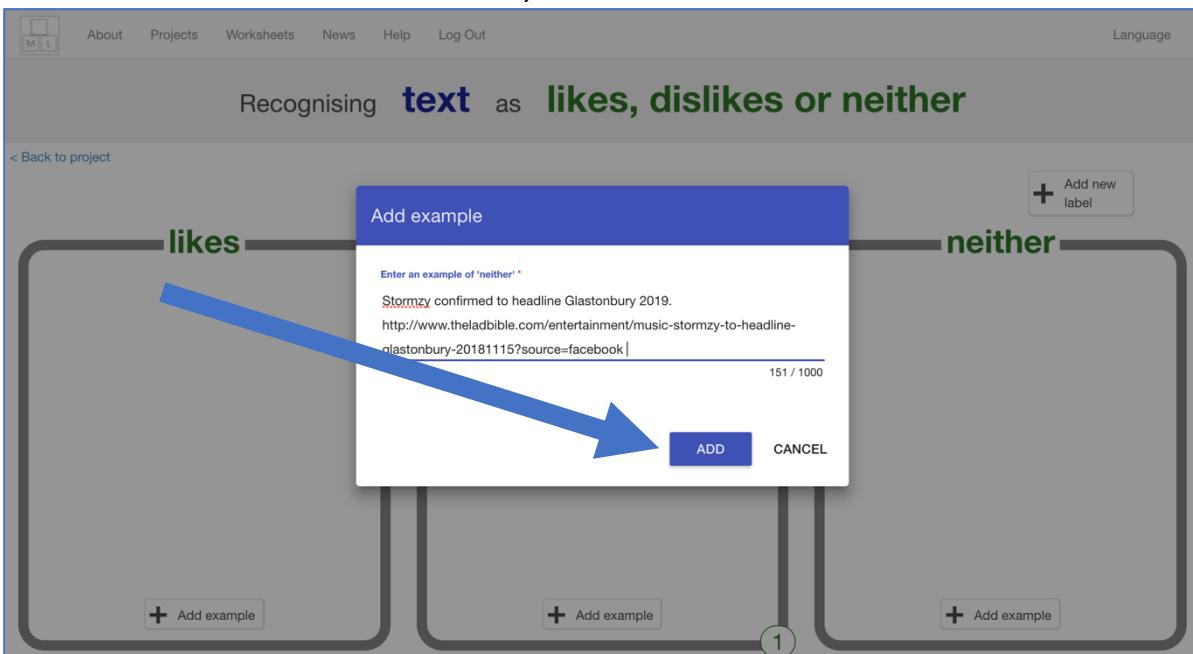
## 18. Paste the negative comment in the box, and click “Add”



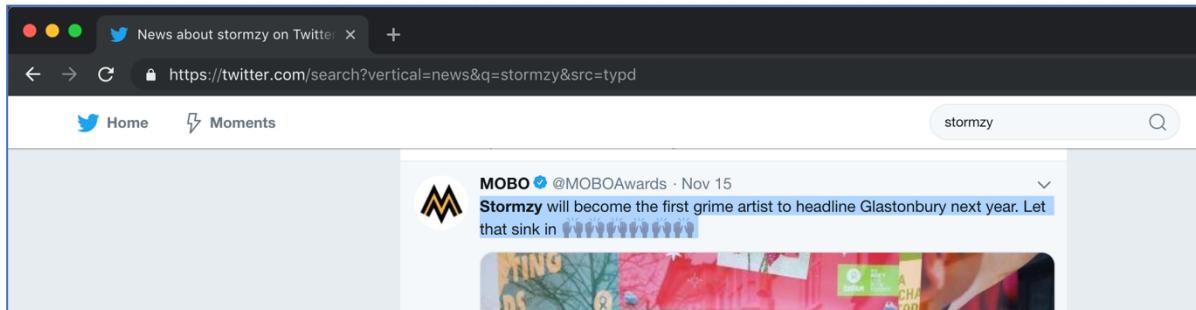
## 19. Find an example of someone mentioning your topic, that isn't really positive or negative, and copy it to the clipboard



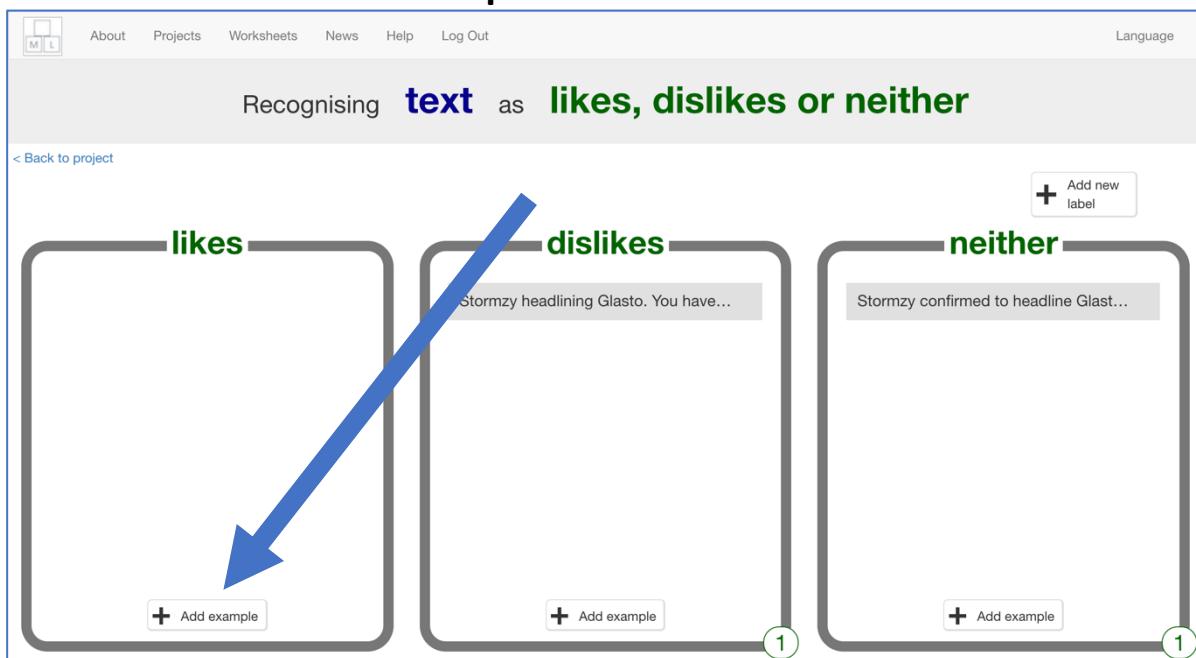
## 20. Click on the “+ Add example” button in the “neither” bucket Paste the comment in the box, and click “Add”



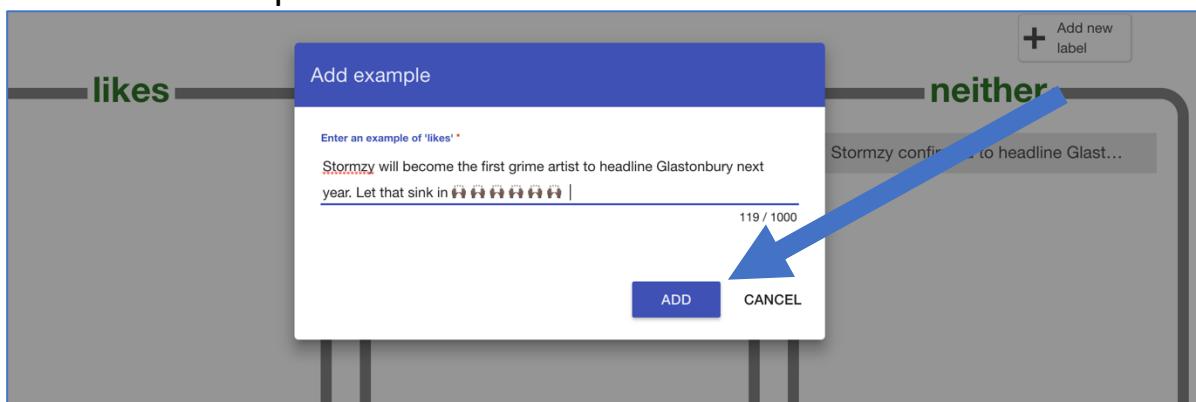
**21.** Find an example of a positive comment about your topic and copy it



**22.** Click the “+ Add example” button in the “likes” bucket



**23.** Paste the positive comment in the box and click “Add”



## 24. Repeat to fill all three buckets with examples

*The more examples, the better your project will work, but the minimum for a working project is about 5 in each bucket.*

The screenshot shows a web interface for collecting examples. At the top, there's a navigation bar with links for About, Projects, Worksheets, News, Help, Log Out, and Language. Below that, the title "Recognising **text** as **likes, dislikes or neither**" is displayed. A link "[< Back to project](#)" is visible. On the right, there's a button "+ Add new label". The main area is divided into three sections: "likes", "dislikes", and "neither". Each section contains 12 examples. The "likes" section examples include: "Stormzy will become the first grime artist to headli...", "Your Friday night Pyramid headliner is the mighty ...", "Yassss - Stormzy for Glastonbury a great booking", etc. The "dislikes" section examples include: "Stormzy headlining Glasto. You have got to be joki...", "How Stormzy qualifies to be a headliner, I do not k...", "Stormzy apparently headlining #Glastonbury is ter...", etc. The "neither" section examples include: "Stormzy confirmed to headline Glastonbury 2019. ....", "Looks like Stormzy is Glastonbury's Friday night h...", "Is Stormzy big enough to headline #Glasto #Glast...", etc. Each section has a "+ Add example" button at the bottom. The number "12" is circled in green in the bottom right corner of each section.

## 25. Click the “[< Back to project](#)” link

## 26. Next, use the examples you’ve collected to train a machine learning model. Click “Learn & Test”

The screenshot shows a web interface for training a machine learning model. At the top, there's a navigation bar with links for About, Projects, Worksheets, News, Help, Log Out, and Language. Below that, the title "'What does twitter think?'". The interface is divided into three main sections: "Train", "Learn & Test", and "Make". The "Train" section has a "Train" button. The "Learn & Test" section has a "Learn & Test" button. The "Make" section has a "Make" button. A large blue arrow points from the "Learn & Test" button towards the "Make" button. Each section contains descriptive text and a button.

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

*This will take a minute or two to train. While you’re waiting, you could try the multi-choice quiz at the bottom of the page.*

The screenshot shows the 'Machine learning models' page. In the center, there are two sections: 'What have you done?' and 'What's next?'. The 'What have you done?' section contains text about collected examples and a list of 12 items. The 'What's next?' section contains text about starting training and a 'Train new machine learning model' button. A large blue arrow points from the text in the 'What's next?' section down to the 'Train new machine learning model' button.

## 28. Click on the “< Back to project” link

## 29. Next, we’ll use Scratch to analyze tweets. Click “Make”

The screenshot shows the 'Machine learning models' page with three main sections: 'Train', 'Learn & Test', and 'Make'. The 'Learn & Test' section has a 'Learn & Test' button. The 'Make' section has a 'Make' button. A large blue arrow points from the text in the 'Learn & Test' section down to the 'Learn & Test' button.

## 30. Click “Scratch 3”

The screenshot shows the 'Scratch 3' website. It features three main options: 'Scratch', 'Scratch 3', and 'Python'. The 'Scratch' option has a 'Scratch' button. The 'Scratch 3' option has a 'Scratch 3' button. A large blue arrow points from the text in the 'Scratch' section down to the 'Scratch' button.

### 31. Click “Open in Scratch 3”

The screenshot shows a project titled "Using machine learning in Scratch 3". The interface includes a navigation bar with "About", "Projects", "Worksheets", "News", "Help", and "Log Out". A "Language" dropdown is in the top right. Below the title, there's a "Back to project" link and an "Open in Scratch 3" button, which is highlighted by a large blue arrow. The main content area contains two sections: one about adding ML blocks to Scratch and another showing a Scratch 3 workspace with a "recognise text" block.

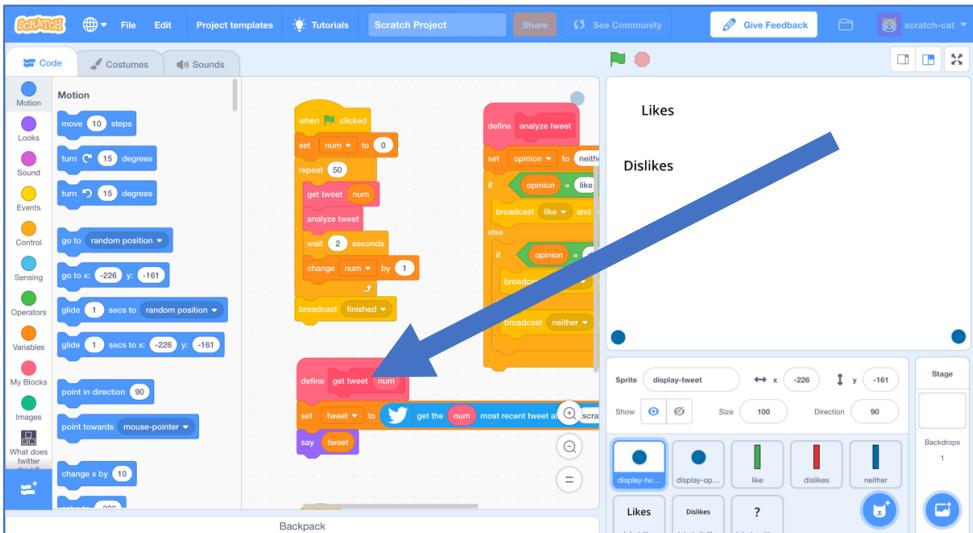
### 32. Click on “Project templates”

The screenshot shows the Scratch 3 workspace. A blue arrow points to the "Project templates" tab in the top menu bar. The workspace itself shows a stage with a cat sprite and a script editor on the left containing various Scratch blocks.

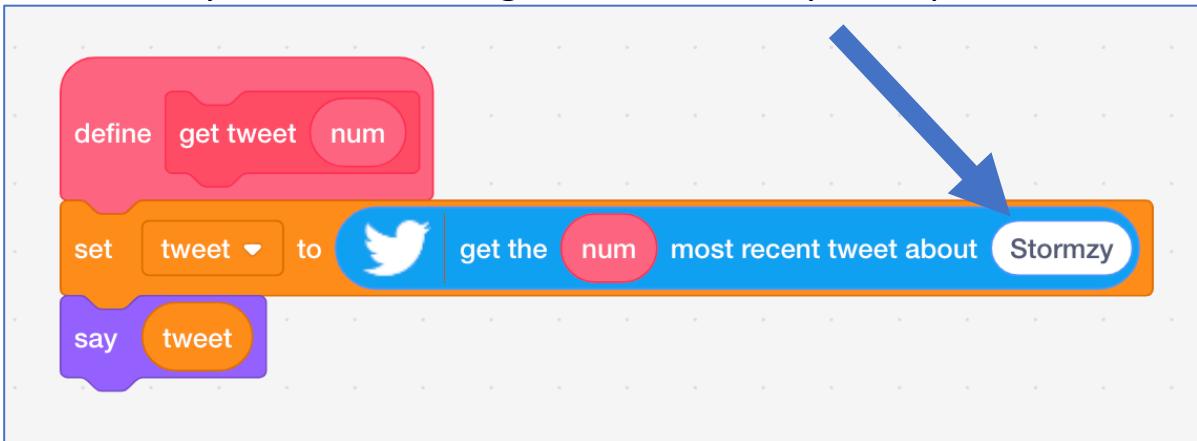
### 33. Find the “What does Twitter think?” project template and click on it

The screenshot shows a grid of project templates under the heading "Machine Learning for Kids project templates". The templates include "Smart Classroom", "Smart Classroom (easy)", "Tourist Info", "Tourist Info (easy)", "Headlines", "Owls", "What does Twitter think?", and "Snap". A blue arrow points to the "What does Twitter think?" template, which features a bird sprite and a text input field.

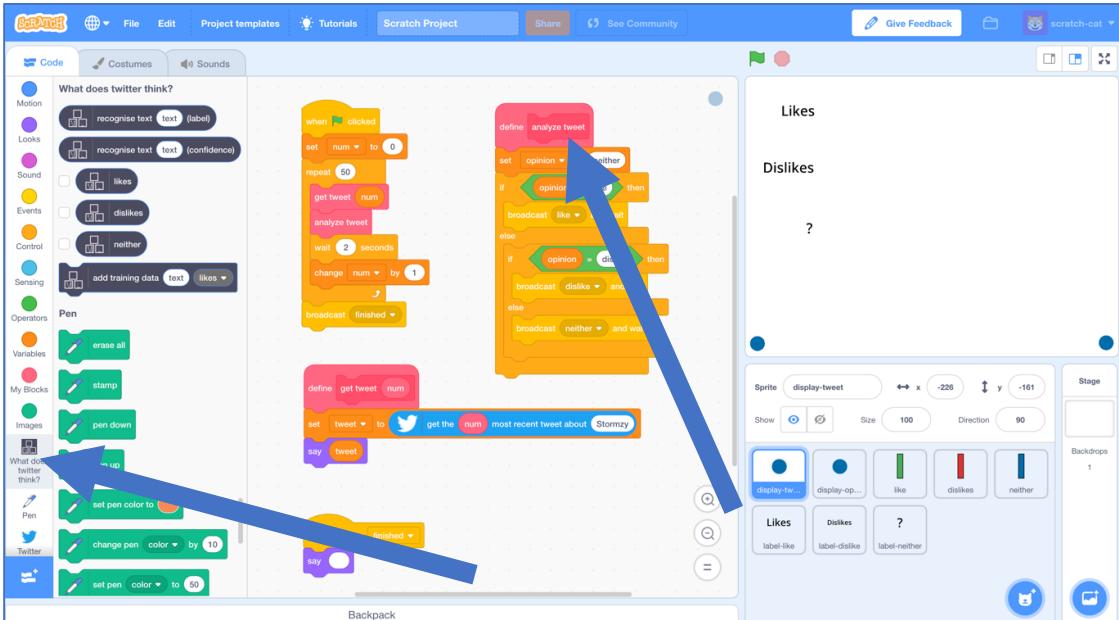
## 34. Find the “get tweet” script



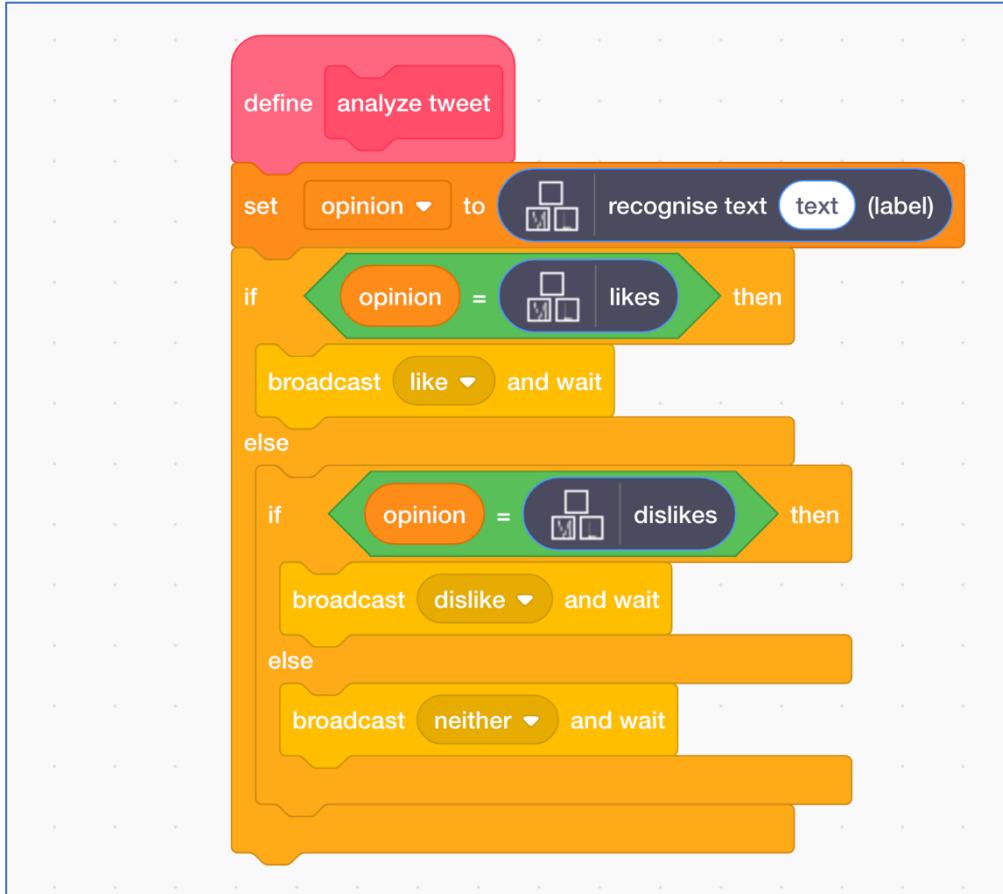
## 35. Modify it so that it will get tweets about your topic



## 36. Find the “analyze tweet” script and the blocks from your project



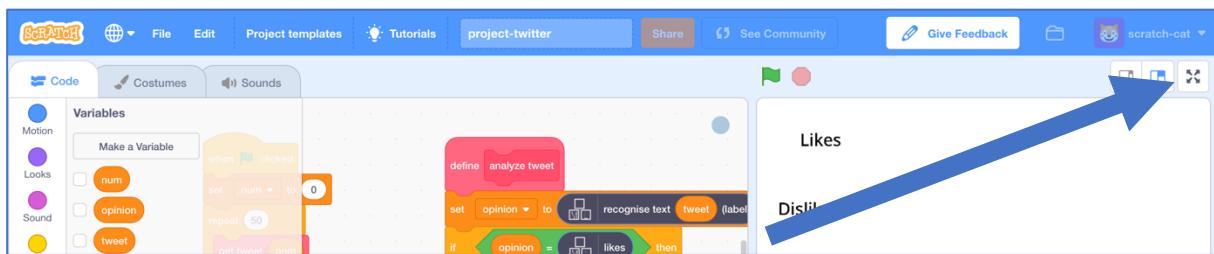
### 37. Drag blocks from your project into the script



### 38. Click on “Variables” in the left-hand side, and drag “tweet” into the “recognise text” block so that your machine learning model will analyze the next tweet

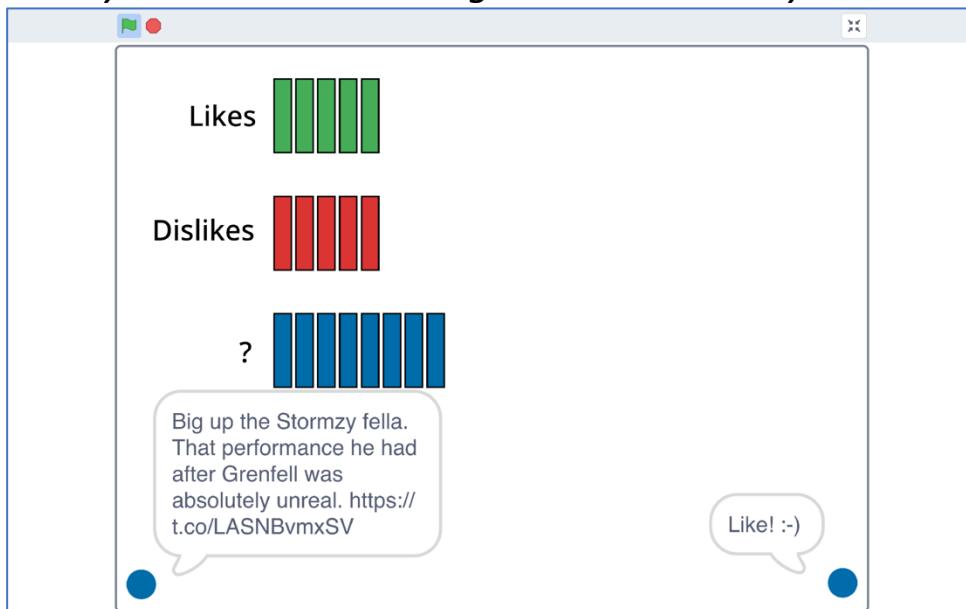


**39.** Time to test! Click the full-screen button.

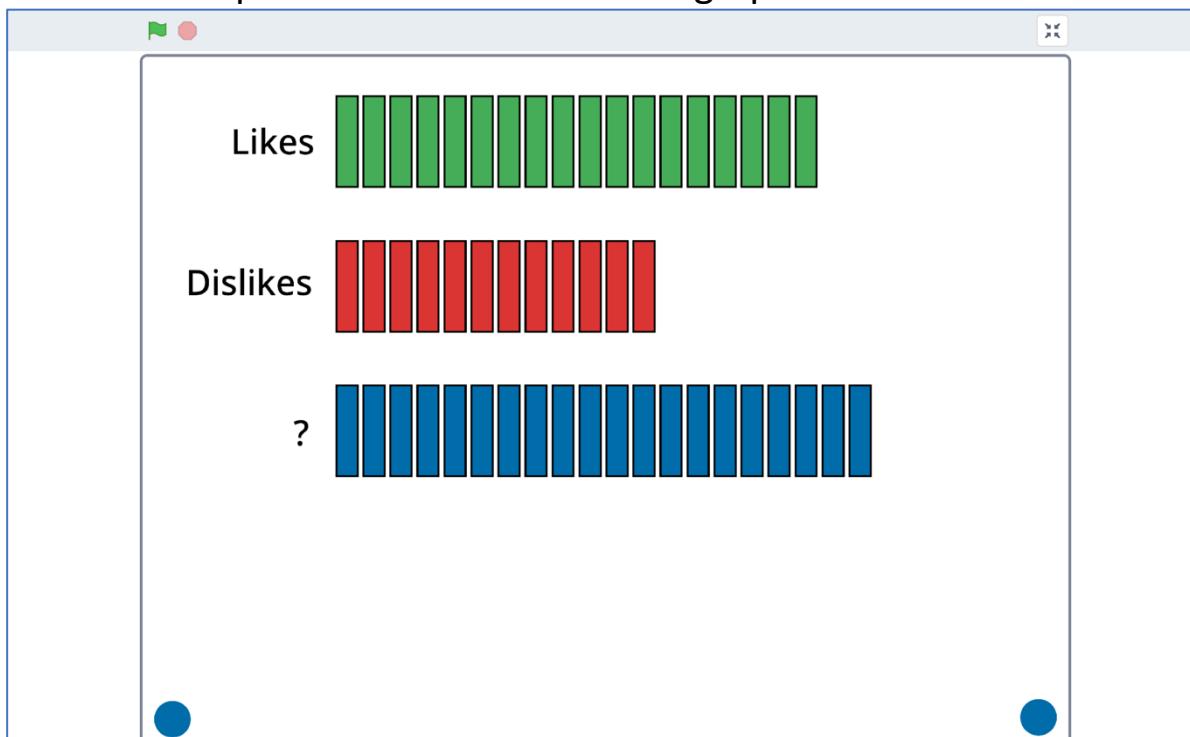


**40.** Click the green flag

*The script will fetch 50 tweets about the topic, and draw a graph based on what your machine learning model thinks they are*



## 41. The script will finish with the final graph



## 42. Save your project.

*Click **File** -> **Save to your computer***

### What have you done?

You're using a type of natural language processing called sentiment analysis to measure the discussion about a topic on social media.

This is a very common usage of machine learning, to analyze what people think about everything from companies, retail products, and world issues.

With a small number of examples, your project will get a lot wrong, but the more examples you give it, the better it should get.

Even then, it will still make mistakes, but by making it easier to measure a very large number of messages quickly, this technique is still useful to give a quick estimate of the public mood.

## 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?

### Make your model more accurate

As the Scratch script plays, it displays what your machine learning model thought of each tweet. You'll probably disagree with some decisions your model makes.

Try to improve this by adding more examples in the “**Train**” page. Make sure you click the “**Train new machine learning model**” button again, to use those new examples. Then run your Scratch script again to see what difference it makes.

### Write a Scratch script to train your model

Copying examples from another web browser is slow. Can you write a Scratch project to make this easier?

Use the “**get tweets**” block and the “**add training data**” block to make a project that will show you tweets, and if you press the “L” add them to the “likes” bucket and if you press the “D” add them to the “dislikes” bucket.

This will make it easier for you to collect training examples.

### Use confidence scores

The confidence score block will tell you how sure your machine learning model is that it has correctly measured a tweet. You could use this so that the graph isn't updated unless the model is very confident.