



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 area displays a live graph with three bars: "Likes" (green), "Dislikes" (red), and a third bar labeled "?" (blue). The script area contains the following code:

```
when green flag clicked
  set num to (0)
  repeat (50)
    get tweet num
    analyze tweet
    wait (2) seconds
    change num by (1)
    broadcast finished
  end
end

define analyze tweet
  set opinion to (0)
  if (opinion = like) then
    broadcast like and wait
  else
    if (opinion = dislike) then
      broadcast dislike and wait
    else
      broadcast neither and wait
    end
  end

define get tweet [num]
  set tweet to (get the [num] most recent tweet about [Stormzy])
  say tweet
```

The script area also includes a "Variables" section with a variable "num" and a "My Blocks" section with a block "analyze tweet". The stage properties for the sprite "display-tweet" are set to x: -226, y: -161, size: 100, direction: 90. The stage backdrop is set to "Backdrops 1".



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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 is set to "text". A tooltip for "Recognising" explains: "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

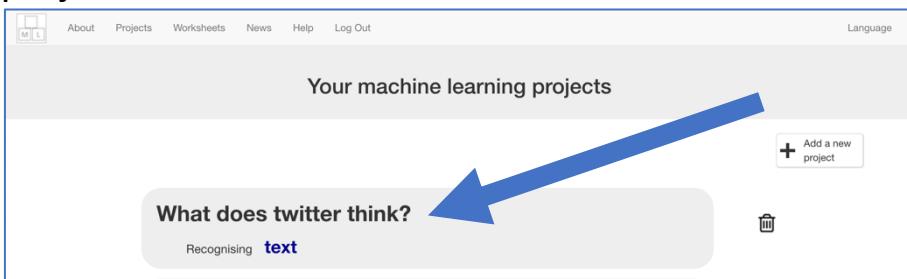
What type of thing do you want to teach the computer to recognise?
For words, sentences or paragraphs, choose "text".
For photos, diagrams and pictures, choose "images".
For sets of numbers or multiple choices, choose "numbers".

Language

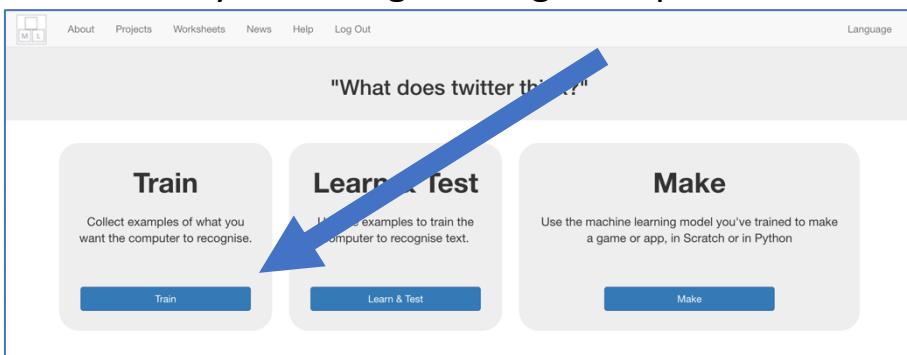
English

CREATE CANCEL

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



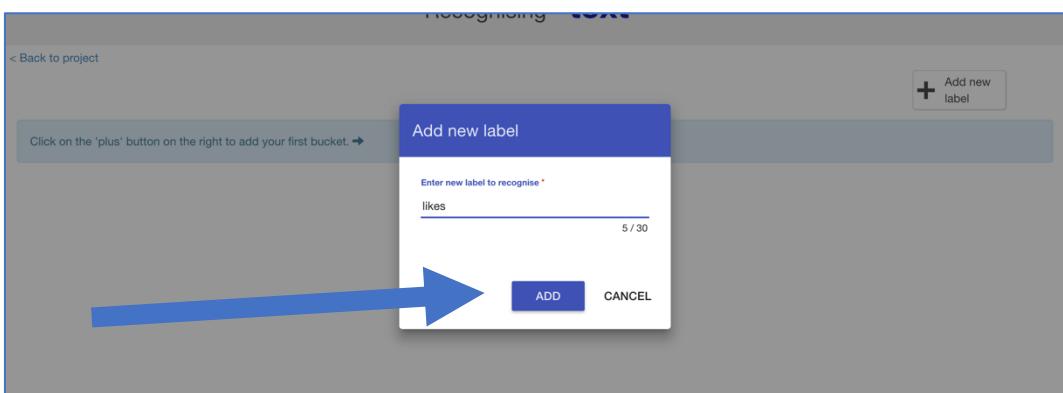
- 9.** Start by collecting training examples. Click “**Train**”



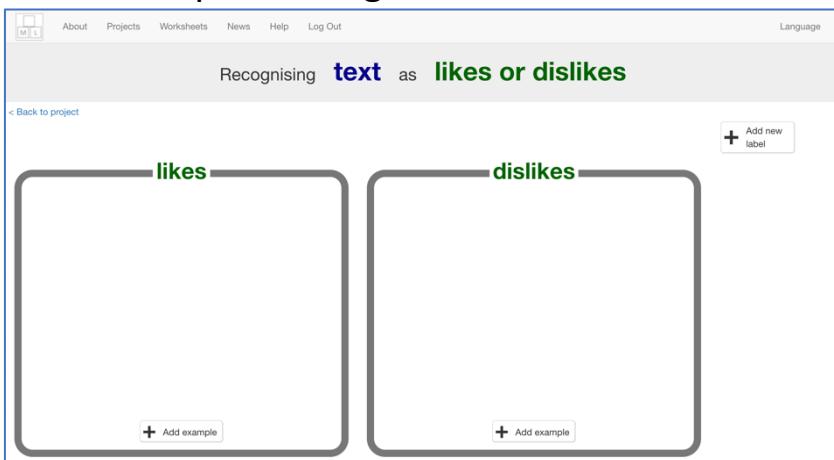
- 10.** First, create a space to store examples of positive comments. Click “**+ Add new label**”



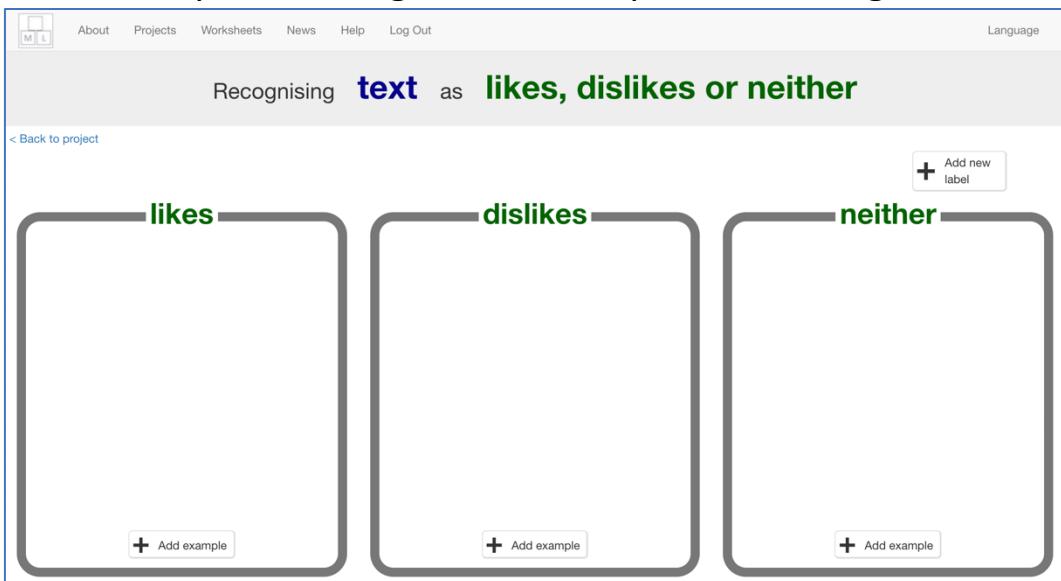
- 11.** Call this bucket “**likes**” and click “**Add**”



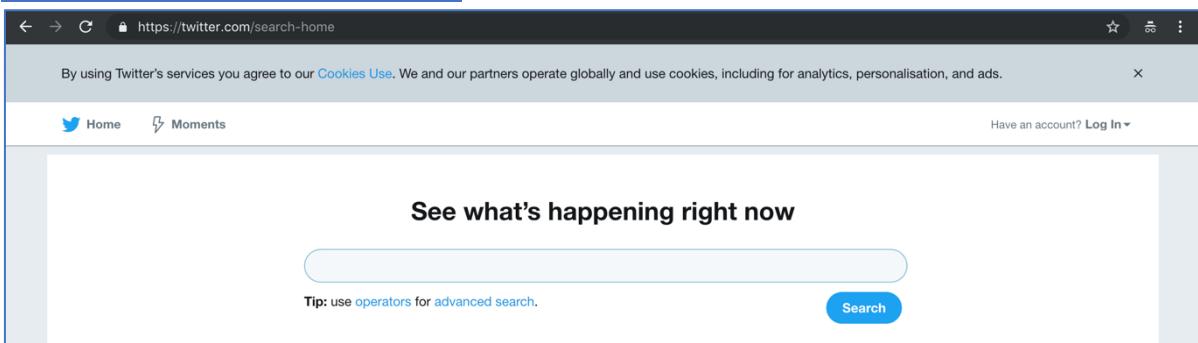
- 12.** Click the “+ Add a new label” button again, and create a space to store examples of negative comments, called “**dislikes**”



- 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

News about stormzy on Twitter

https://twitter.com/search?vertical=news&q=stormzy&src=typd

Home Moments

stormzy

Have an account? Log In

stormzy

Top Latest People Photos Videos News Broadcasts

Search filters · Show

Related searches
@glastofest

New to Twitter?
Sign up now to get your own personalised timeline!

Sign up

Worldwide trends

#IREvNZL 30.3K Tweets
Ohio State 45.9K Tweets
#شعر_لأصنادق_أبدا 25.4K Tweets
Urban Meyer

People

Glastonbury Festival @GlastoFest

Tweets 5,829 Following 291 Followers 693K

Follow

Glastonbury Festival
Official Glastonbury feed. We can't answer all questions asked here, but they should be answered at our website (link below). Glastonbury 2019, June 26-30 2019.
Worthy Farm, Pilton • glastonburyfestivals.co.uk

ROB @RKELLAS · Nov 15
Stormzy headlining Glasto. You have got to be joking?

jamie cairney @tombsjay · Nov 15

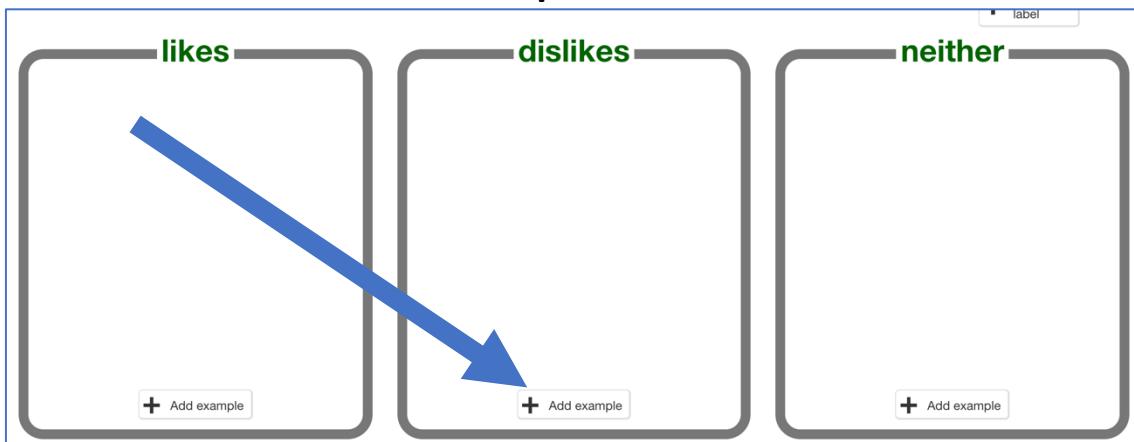
16. Find an example of someone saying something negative about your topic, and copy it to the clipboard

answered at our website (link below). Glastonbury 2019, June 26-30 2019.
Worthy Farm, Pilton • glastonburyfestivals.co.uk

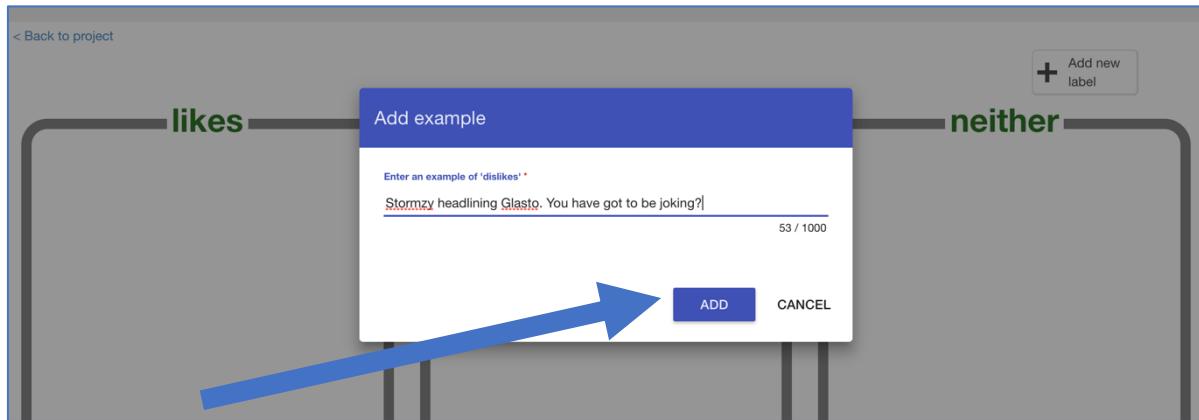
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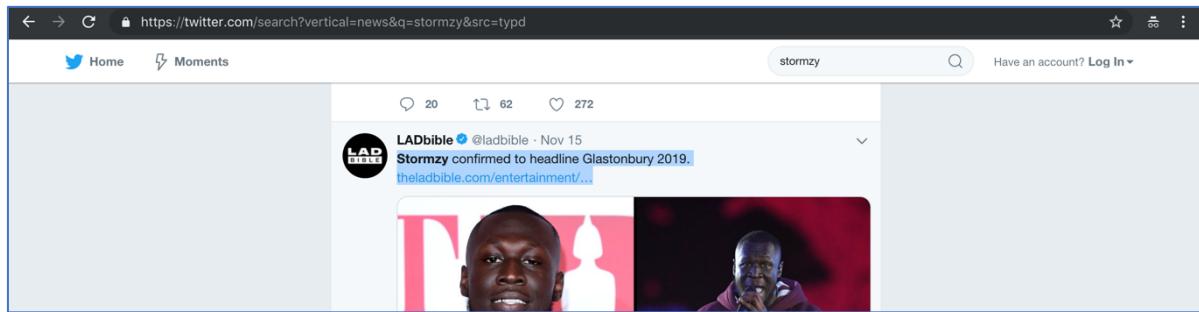
17. Click on the “+ Add example” button in the “dislikes” bucket



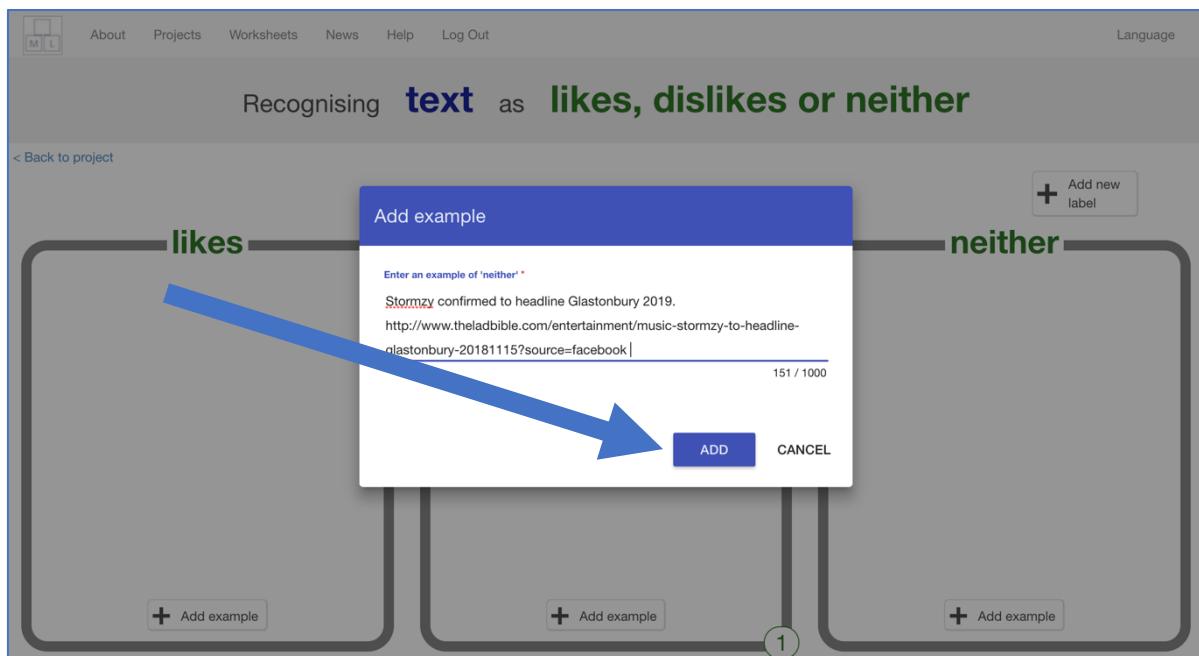
18. Paste the negative comment in the box, and click “Add”



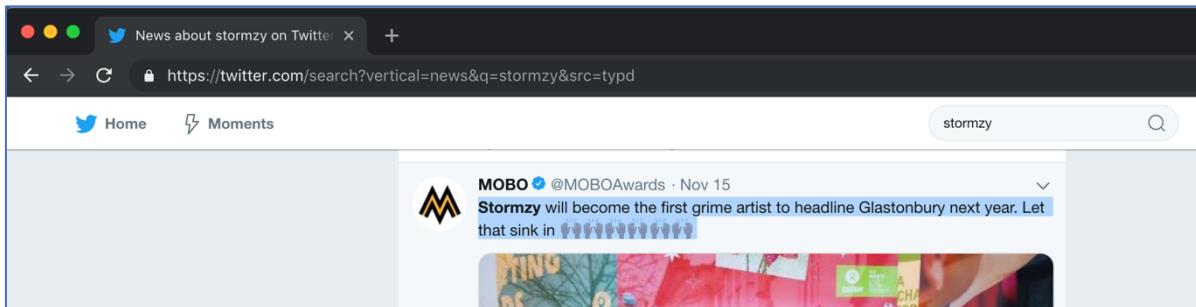
19. Find an example of someone mentioning your topic, that isn't really positive or negative, and copy it to the clipboard



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

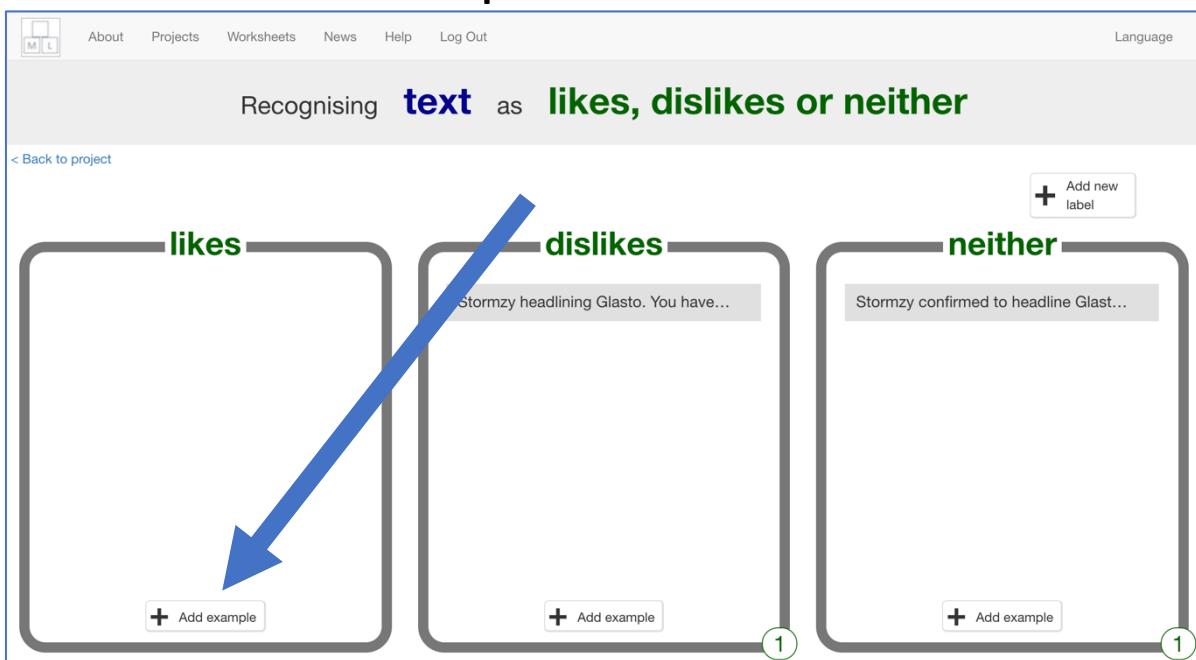


21. Find an example of a positive comment about your topic and copy it



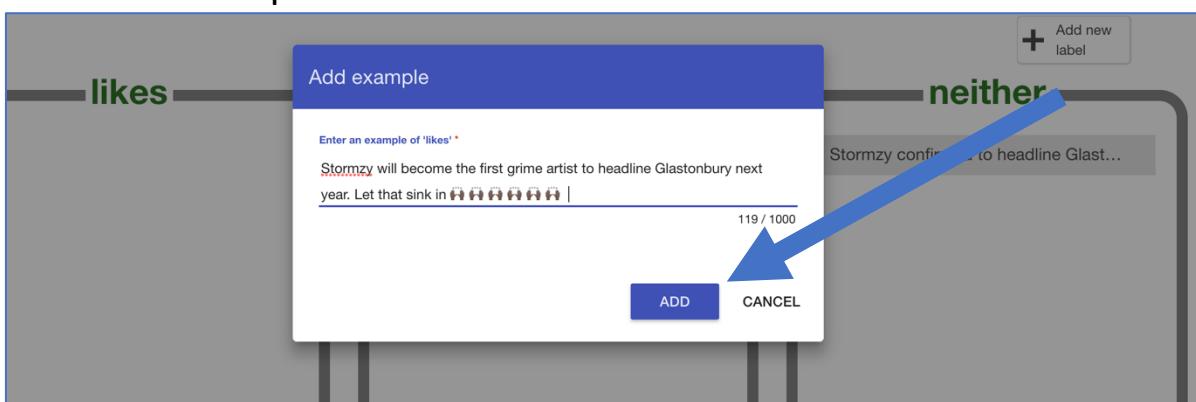
A screenshot of a web browser showing a Twitter search results page for the query "stormzy". The search bar at the top shows "News about stormzy on Twitter". Below the search bar, there are navigation links for "Home" and "Moments". The main content area displays a tweet from a user named "MOBO" (@MOBOAwards) posted on November 15. The tweet content is: "Stormzy will become the first grime artist to headline Glastonbury next year. Let that sink in 🎤🎶". The entire text of the tweet is highlighted with a blue selection bar.

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



A screenshot of a web-based application for sentiment analysis. The interface has a header with navigation links: "About", "Projects", "Worksheets", "News", "Help", and "Log Out". On the right side, there is a "Language" dropdown menu. The main content area is titled "Recognising **text** as **likes, dislikes or neither**". Below this title, there are three rectangular boxes representing categories: "likes", "dislikes", and "neither". Each category box contains a snippet of text and a button labeled "+ Add example". A large blue arrow points from the "likes" box to its "+ Add example" button. The "dislikes" box contains the text "Stormzy headlining Glasto. You have...". The "neither" box contains the text "Stormzy confirmed to headline Glast...". There are also small green circles with the number "1" next to the "+ Add example" buttons in the "dislikes" and "neither" boxes.

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



A screenshot of a web-based application for sentiment analysis. The interface has a header with navigation links: "About", "Projects", "Worksheets", "News", "Help", and "Log Out". On the right side, there is a "Language" dropdown menu. The main content area is titled "Recognising **text** as **likes, dislikes or neither**". Below this title, there are three rectangular boxes representing categories: "likes", "dislikes", and "neither". Each category box contains a snippet of text and a button labeled "+ Add example". A large blue arrow points from the "likes" box to its "+ Add example" button. The "dislikes" box contains the text "Stormzy headlining Glasto. You have...". The "neither" box contains the text "Stormzy confirmed to headline Glast...". There are also small green circles with the number "1" next to the "+ Add example" buttons in the "dislikes" and "neither" boxes. In the center, a modal dialog box is open with the title "Add example". It contains a text input field with the placeholder "Enter an example of 'likes'" and the copied tweet text "Stormzy will become the first grime artist to headline Glastonbury next year. Let that sink in 🎤🎶". Below the input field, there is a progress bar showing "119 / 1000". At the bottom of the dialog box are two buttons: "ADD" and "CANCEL". A blue arrow points from the "ADD" button in the main interface to the "ADD" button in the dialog box.

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 application interface for labeling text examples. 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: "Recognising text as likes, dislikes or neither". A "Back to project" link is also present. On the right, there's a button to "Add new label".

The main area contains three sections:

- likes:** Contains 12 examples. One example is visible: "Stormzy will become the first grime artist to headlin...". A "Add example" button is at the bottom.
- dislikes:** Contains 12 examples. One example is visible: "Stormzy headlining Glasto. You have got to be joki...". A "Add example" button is at the bottom.
- neither:** Contains 12 examples. One example is visible: "Stormzy confirmed to headline Glastonbury 2019.". A "Add example" button is at the bottom.

Each section has a circular counter at the bottom right indicating the number of examples collected (12).

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 application interface titled "What does twitter think?". At the top, there's a navigation bar with links for About, Projects, Worksheets, News, Help, Log Out, and Language.

The main area features three large buttons:

- Train:** Collect examples of what you want the computer to recognise. A "Train" button is at the bottom.
- Learn & Test:** Use the examples to train the computer to recognise text. This button is highlighted with a blue arrow pointing to it.
- Make:** Use the machine learning model you've trained to make a game or app, in Scratch or in Python. A "Make" button is at the bottom.

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 a web page titled "Machine learning models". 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 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 a web page titled "What does twitter think?". It features 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 text in the "Make" section down to the "Make" button.

30. Click “Scratch 3”

The screenshot shows a web page titled "Make something with your machine learning model". It features three options: "Scratch", "Scratch 3", and "Python". The "Scratch" section has a "Scratch" button. The "Scratch 3" section has a "Scratch 3" button. The "Python" section has a "Python" button. A large blue arrow points from the text in the "Scratch 3" section down to the "Scratch 3" button.

31. Click “Open in Scratch 3”

The screenshot shows a project titled "Using machine learning in Scratch 3". At the top left is a "Back to project" link. Below it is a "Open in Scratch 3" button, which has a large blue arrow pointing towards the Scratch 3 interface. The interface itself shows the Scratch 3 workspace with a cat sprite, a script editor with some code, and a stage area.

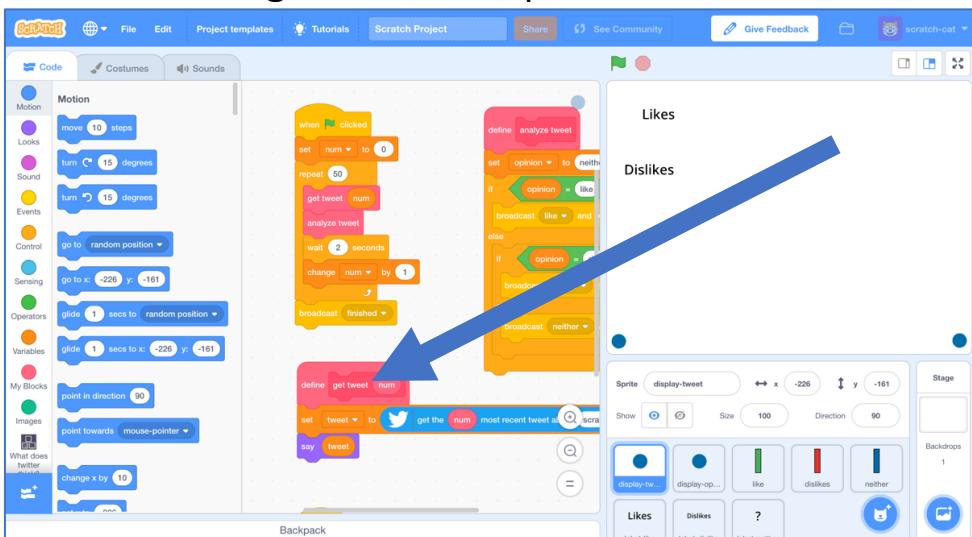
32. Click on “Project templates”

The screenshot shows the Scratch 3 workspace with the "Project templates" tab selected. A large blue arrow points from the tab to the list of available project templates on the left side of the screen. The templates include "Motion", "Looks", "Sound", "Events", "Control", "Sensing", "Operators", "Variables", "My Blocks", "Images", and "What does Twitter think?".

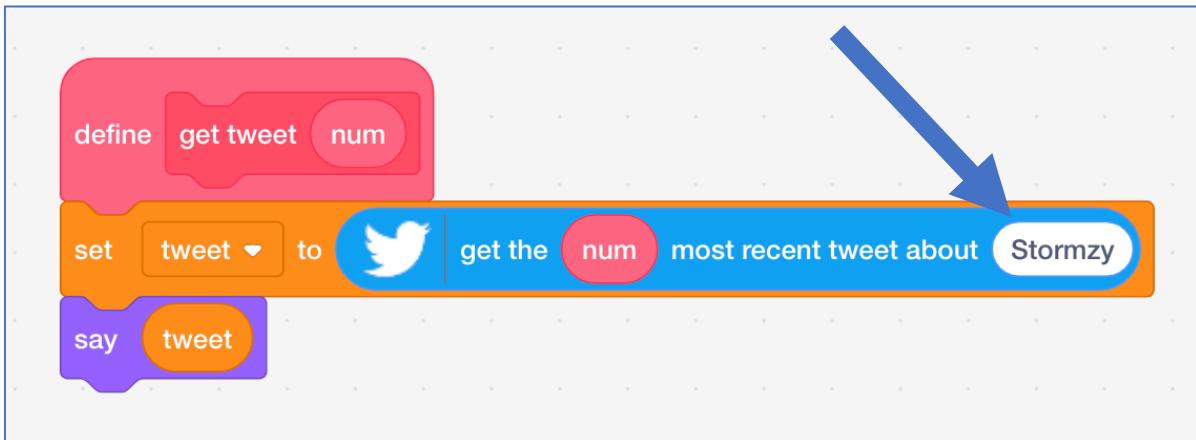
33. Find the “What does Twitter think?” project template and click on it

The screenshot shows the "Machine Learning for Kids project templates" page. The "Text projects" tab is selected. A large blue arrow points from this tab to the "What does Twitter think?" template card, which is highlighted with a blue border. Other visible templates include "Smart Classroom", "Smart Classroom (easy)", "Tourist Info", "Tourist Info (easy)", "Headlines", "Owls", "Snap", and "Last Word".

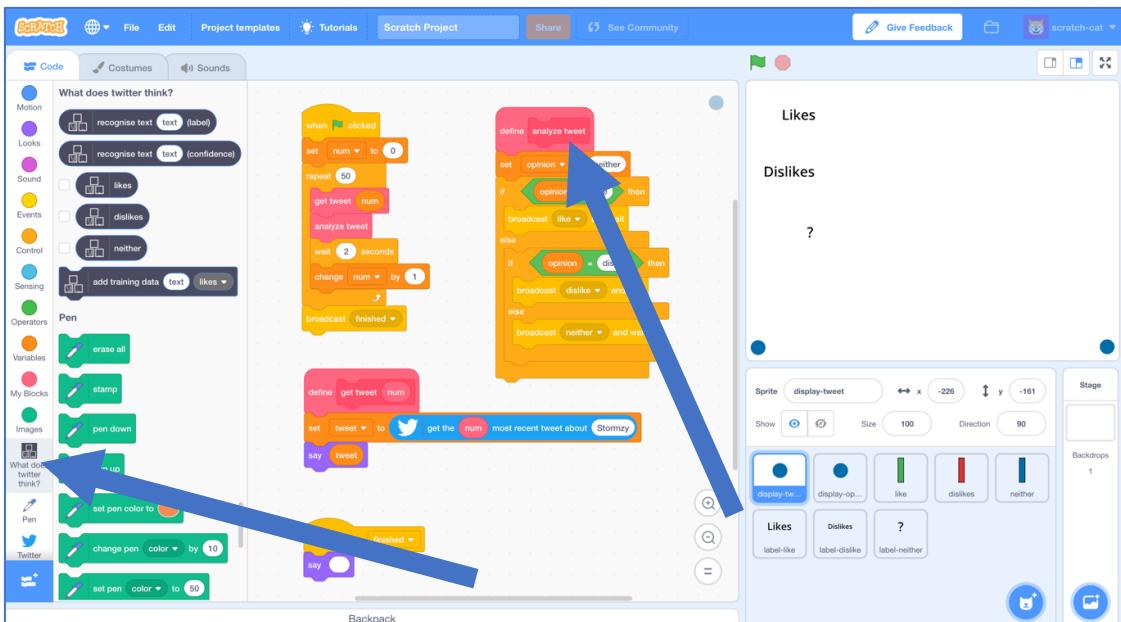
34. Find the “get tweet” script



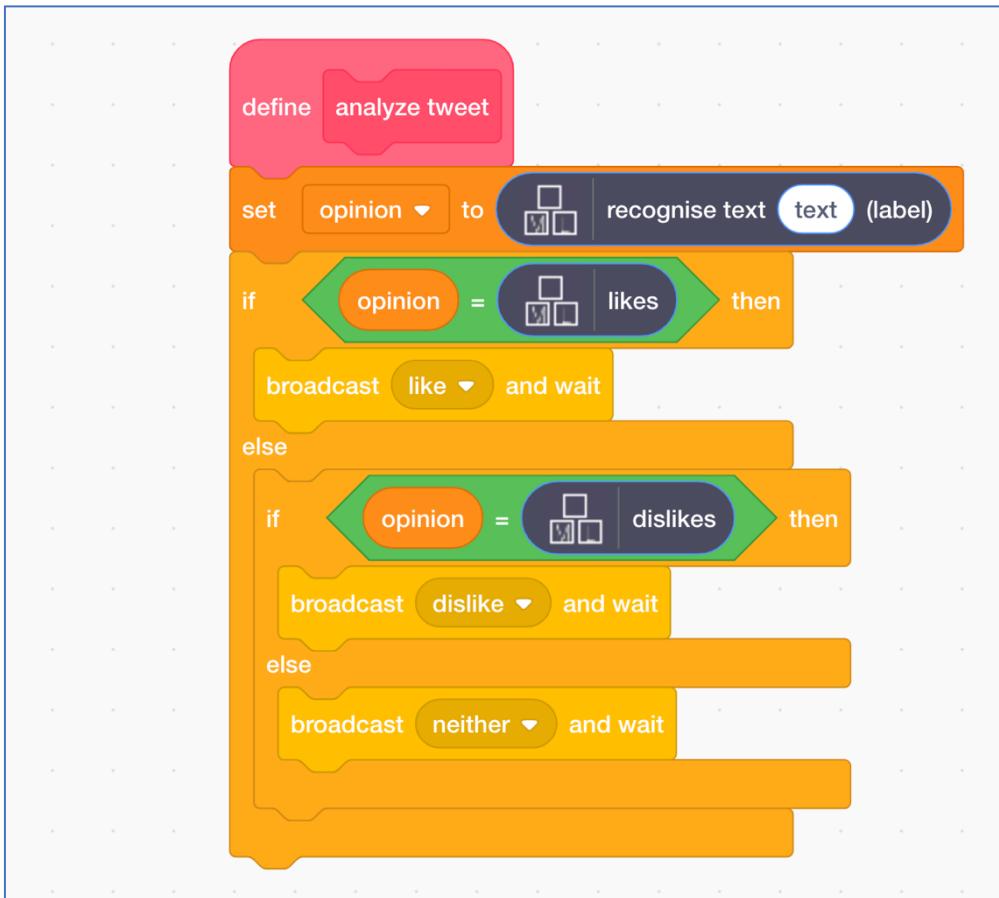
35. Modify it so that it will get tweets about your topic



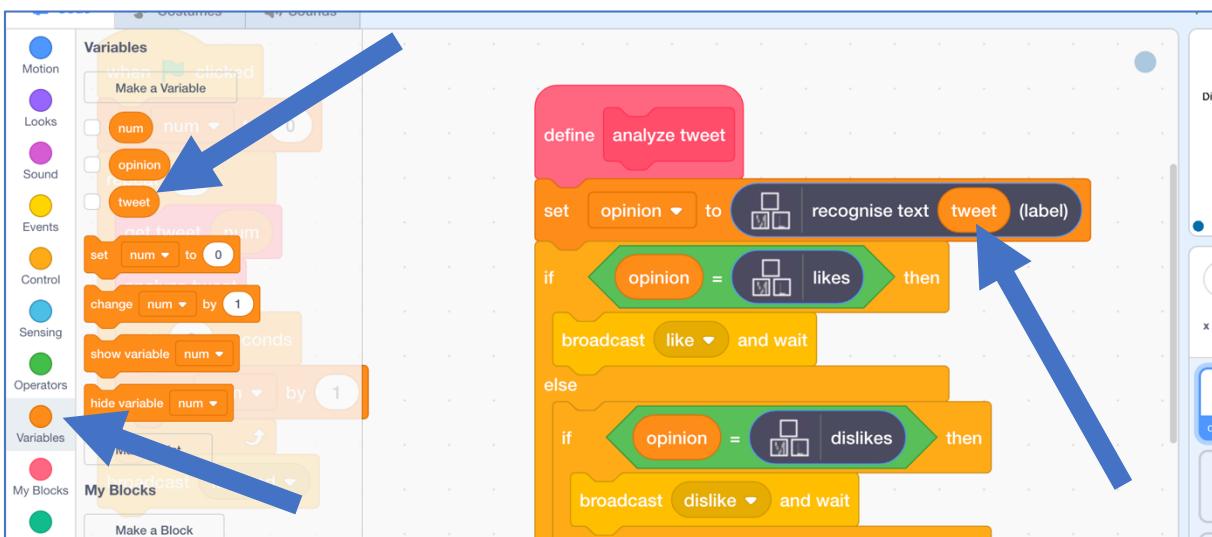
36. Find the “analyze tweet” script and the blocks from your project



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

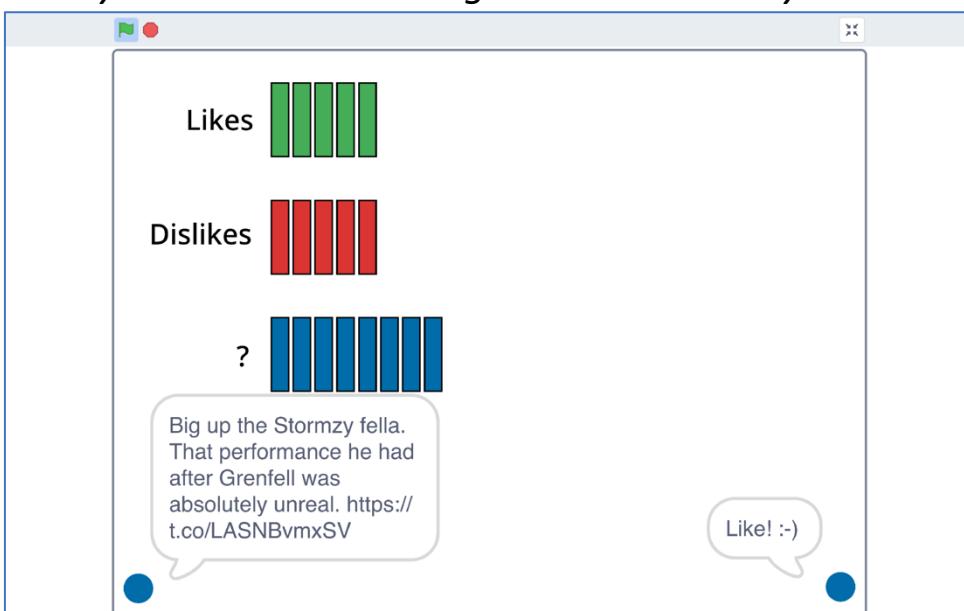


39. Time to test! Click the full-screen button.

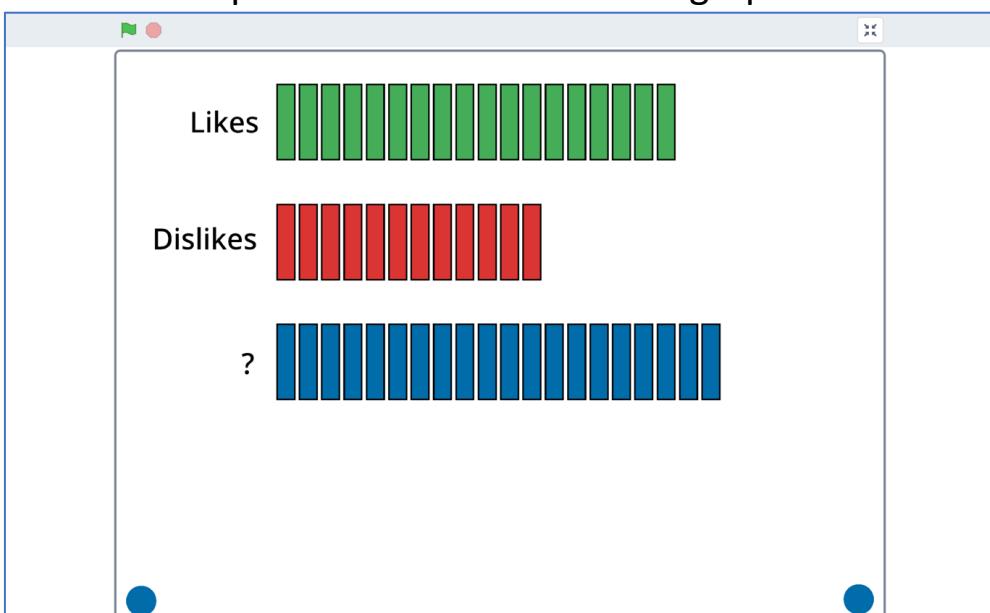


40. Click the green flag

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



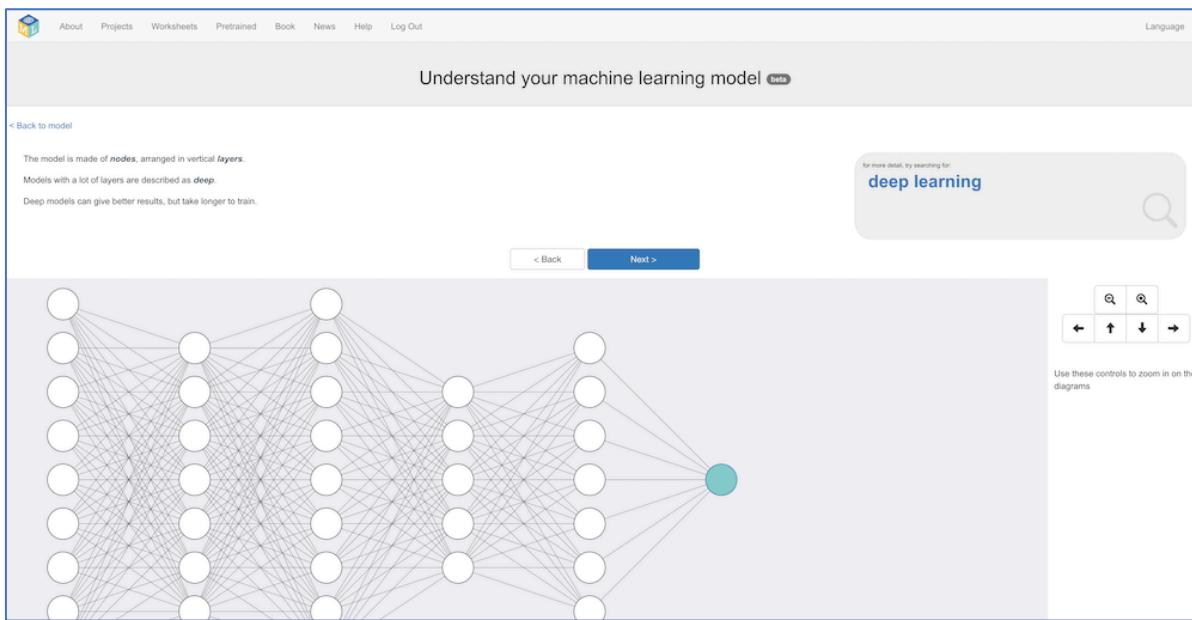
41. The script will finish with the final graph



42. Save your project.

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

43. To see an explanation of how your machine learning model works, go to the **Learn & Test** page and click on the “**Describe your model**” button



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.