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.

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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 <u>https://machinelearningforkids.co.uk/</u> 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

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



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C wa	ollect examples of what you nt the computer to recognise.	Line examples to train the computer to recognise text.	Use the machine learning model you've trained to make a game or app, in Scratch or in Python	

10. First, create a space to store examples of positive comments. Click "+ Add new label"



11. Call this bucket "**likes**" and click "Add"

< Back to project		+ Add new label
Click on the 'plus' button on the right to add your first bucket.	Add new label	
	Enter new label to recognise * likes 5 / 30 ADD CANCEL	

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"

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

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	y	Home	C/2 Moments	Have an account? Log	In▼		
			See what's happening right now				

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 About Projects Worksheets News Help Log Out Language Recognising text as likes, dislikes or neither < Back to project + Add new label likes dislikes neither = headlining Glasto. You have. Stormzy confirmed to headline Glast... + Add example Add example + Add example 1 1

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.



25. Click the "< Back to project" link

26. Next, use the examples you've collected to train a machine learning model. Click "Learn & Test"



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. Machine learning models < Back to project What's next? What have you done? You have collected examples of text for a computer to use to nputer's training? Ready to star recognise when text is likes, dislikes or neither. Click ton below to start training a machine learning model You've collected: examples you have collected so far 12 examples of likes, Or go back to the Train page if you want to collect some more 12 examples of dislikes, examples first.) 12 examples of neither Info from training computer

28. Click on the "< Back to project" link



30. Click "Scratch 3"



31. Click "Open in Scratch 3"

About Projects Worksheets News Help Log Out	Language
Using machine lea	arning in Scratch 3
< Back to project Open in Scratch 3	
Your project will add these blocks to Scratch.	It will look something like this - except with the name of your project.
Put text in the input for this, and it will return the label that your machine learning model recognises it as.	Costumes 40 Sounds
This will return how confidence) This will return how confident your machine learning model is that it recognises the type of text. (As a number from 0 - 100).	Operators



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



34. Find the "get tweet" script

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

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•	say tweet							

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



37. Drag blocks from your project into the script

	define analyze tweet
	set opinion v to recognise text text (label)
	if opinion = likes then
	broadcast like and wait
	else if opinion = dislikes then
	broadcast dislike and wait
	else
	broadcast neither and wait

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

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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





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.