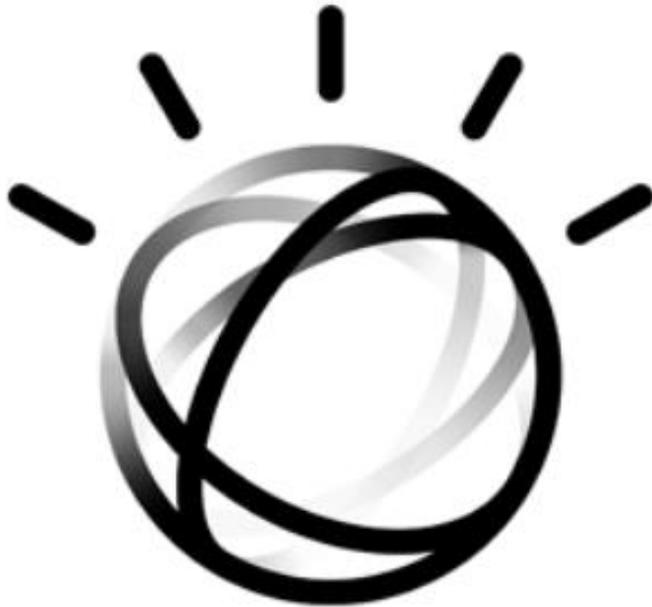

TRAIN YOUR COMPUTER WITH MACHINE LEARNING

AN IBM VOLUNTEERS ACTIVITY



DEE

@STEMDEEP

DEEPSTEM.WORDPRESS.COM

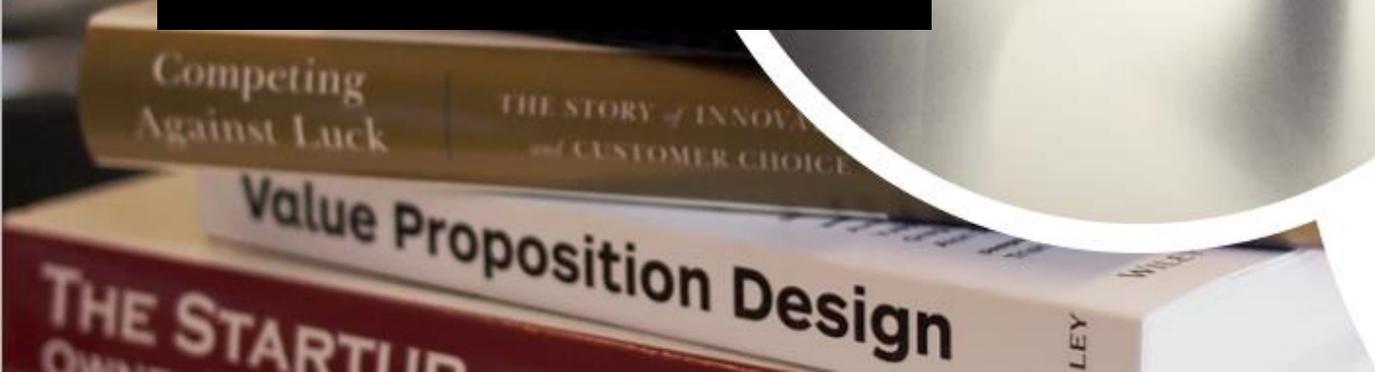
Feb 28 2019

MARSHALL MIDDLE SCHOOL

```
11 "react": "^16.4.1",
12 "react-dom": "^16.4.1",
13 "replace": "^1.0.0",
14 "watson-react-components": "^0.6.16",
15 "watson-developer-cloud": "^3.7.0"
16 },
17 "devDependencies": {
18 "codemirror": "^5.20.6",
19 "eslintrc": "^1.1.1",
20 "eslintrc": "^1.1.1",
21 "istanbul": "^0.4.5",
22 "mocha": "^5.2.0",
23 "nock": "^10.0.1",
24 "react-scripts": "0.0.0",
25 "script5": "0.0.0",
26 "start": "0.0.0",
27 "auto": "0.0.0",
28 "build": "0.0.0",
29 "build": "0.0.0",
30 "codemirror": "0.0.0",
31 "eject": "0.0.0",
32 "lint": "0.0.0",
33 "start": "0.0.0",
34 "test": "0.0.0",
35 "train": "0.0.0",
36 "watson": "0.0.0"
```

ABOUT ME

Computer Engineer
Product Manager
Love to Read
Hate Horror Movies
Start-up Aficionado



LET'S GET TO
KNOW EACH
OTHER!

Your
Name



Your
Grade



QUICK SURVEY

Programming

- Who has coded before?
 - What computer languages?
 - Can you share examples?
- 

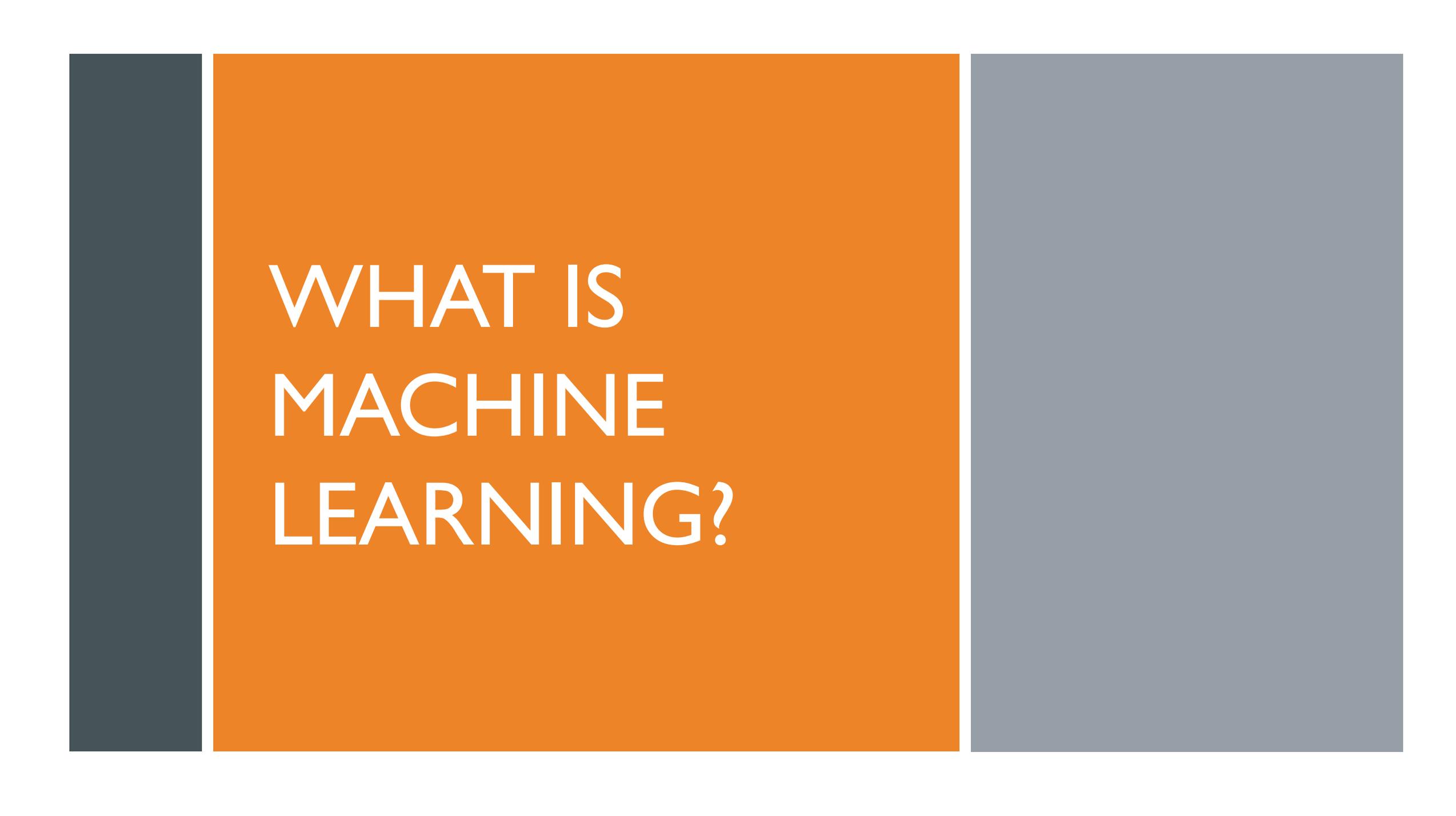


QUICK SURVEY

Scratch

- Who has used scratch before?
 - What did you build?
- 

WHAT IS ARTIFICIAL INTELLIGENCE?



WHAT IS MACHINE LEARNING?

PLAN FOR TODAY

- Programming vs. Machine Learning
- Hands-on activity: Create a character in Scratch that smiles if you say nice things and cries if you say mean things
- Machine Learning Concepts

PROGRAMMING

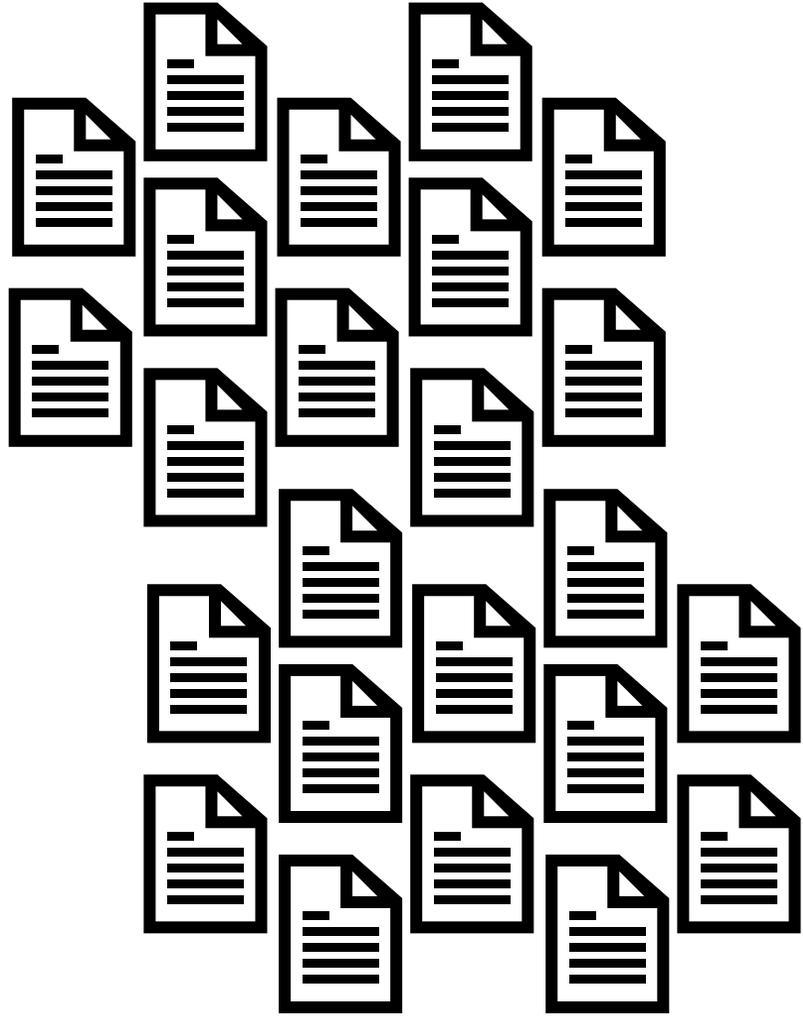
BREAKING
DOWN A
TASK INTO A
SERIES OF
STEPS THAT
CAN BE
FOLLOWED

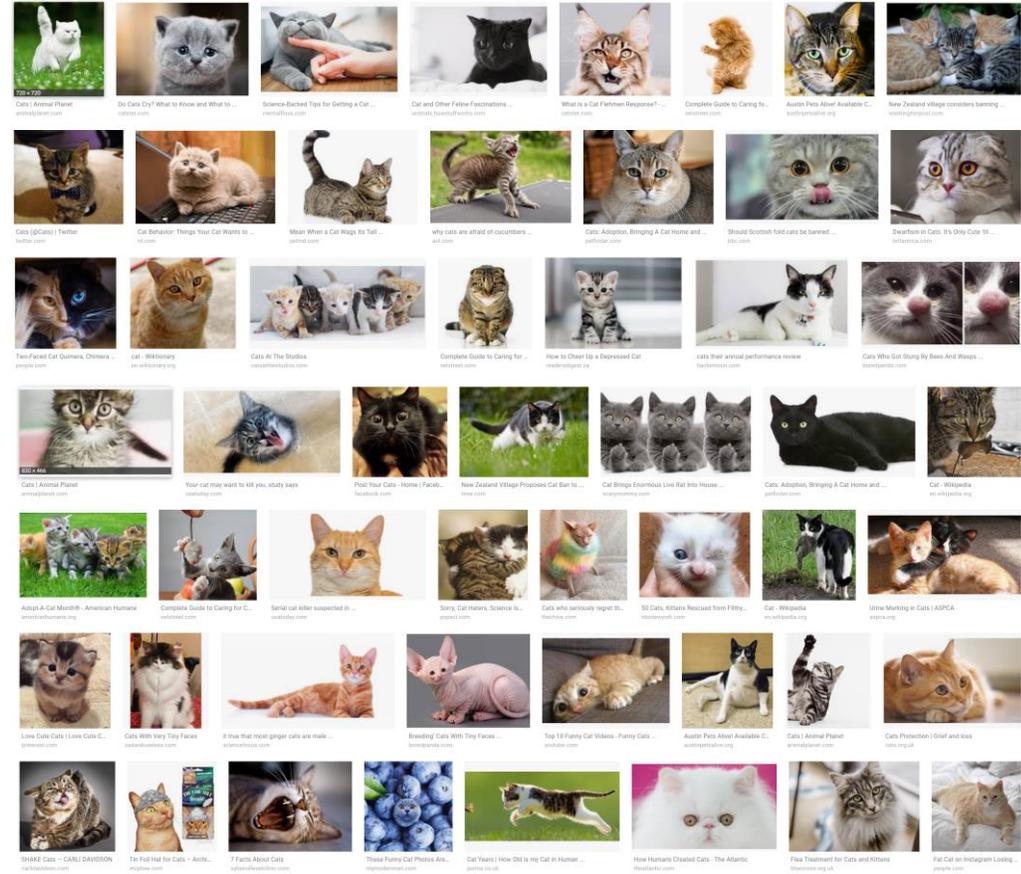
```
when clicked
  go to x: 0 y: 90
  delete all of Players
  delete all of Player ID
  forever
    if screen = title then
      show
    else
      hide
```

```
when clicked
  set frame to 0
  forever
    point in direction 90 + sin of frame * 20
    change frame by 15
```

MACHINE LEARNING

LEARNING
HOW TO
PERFORM A
TASK FROM A
COLLECTION
OF EXAMPLES





Images from Google Search for "cats"

AI Assistant



Integrate diverse conversation technology into your application.

[Watson Assistant](#)

Build an AI assistant for a variety of channels, including mobile devices, messaging platforms, and even robots.

Knowledge



Get insights through accelerated data optimization capabilities.

[Discovery](#)

Unlock hidden value in data to find answers, monitor trends and surface patterns.

[Discovery News](#)

Access pre-enriched news content in real-time.

[Natural Language Understanding](#)

Natural language processing for advanced text analysis.

[Knowledge Studio](#)

Teach Watson to discover meaningful insights in unstructured text.

Empathy



Understand tone, personality, and emotional state.

[Personality Insights](#)

Predict personality characteristics through text.

[Tone Analyzer](#)

Understand emotions and communication style in text.

Vision



Identify and tag content then analyze and extract detailed information found in an image.

[Visual Recognition](#)

Tag and classify visual content using machine learning.

Speech



Convert text and speech with the ability to customize models.

[Speech to Text](#)

Easily convert audio and voice into written text.

[Text to Speech](#)

Convert written text into natural-sounding audio.

Language



Analyze text and extract meta-data from unstructured content.

[Language Translator](#)

Translate text from one language to another.

[Natural Language Classifier](#)

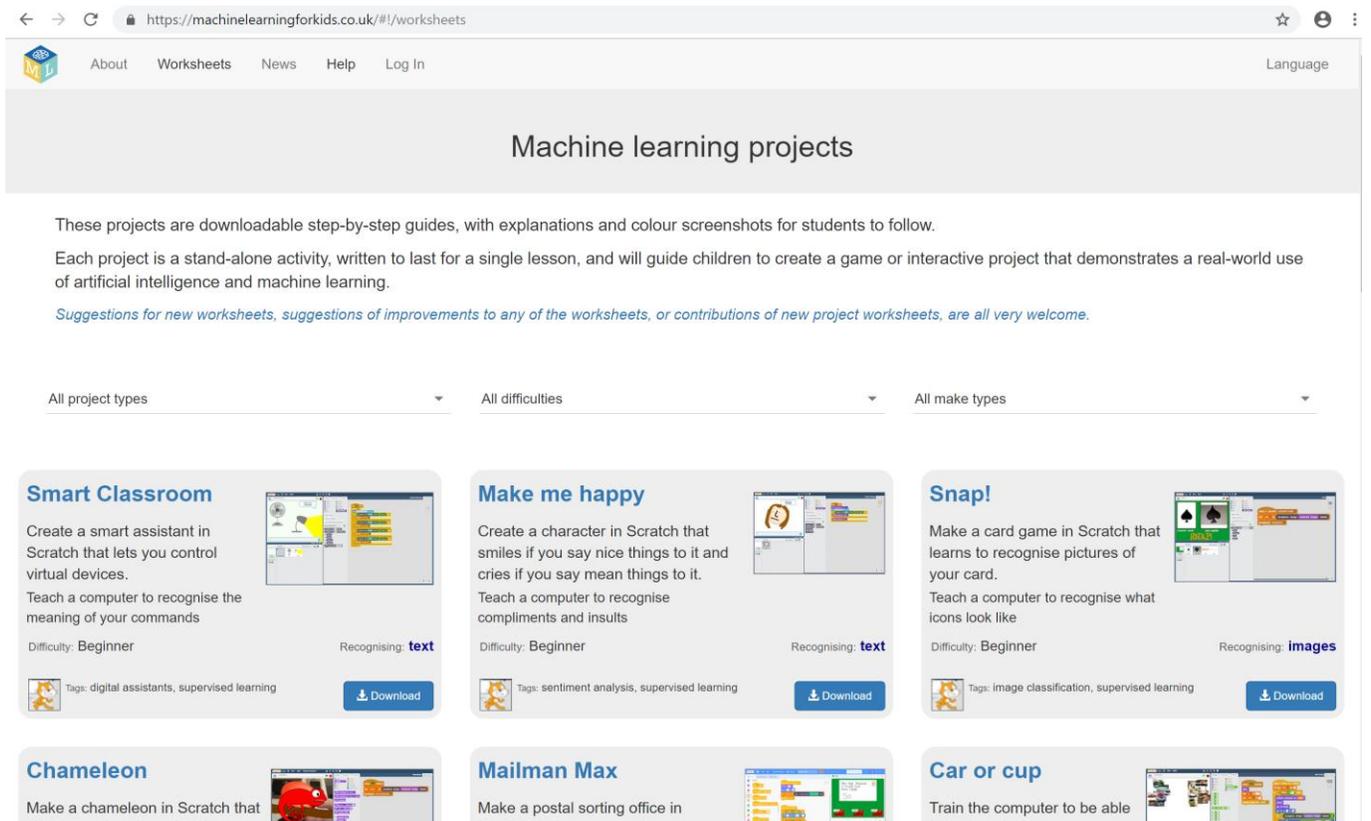
Interpret and classify natural language with confidence.

HANDS-ON ACTIVITY

- Create a sprite in Scratch
- Program it to recognize a kind sentence and a mean sentence
- Create a machine learning model using Watson
- Teach the model with examples of kind and mean sentences
- Use the model for your sprite
- Voila! It learns!

LET'S GET STARTED!

<https://machinelearningforkids.co.uk>



The screenshot shows a web browser at the URL <https://machinelearningforkids.co.uk/#1/worksheets>. The page title is "Machine learning projects". Below the title, there is a paragraph explaining that these projects are downloadable step-by-step guides for students. It also mentions that each project is a stand-alone activity for a single lesson. A blue link offers suggestions for new worksheets or improvements. Below this, there are three dropdown menus for "All project types", "All difficulties", and "All make types". The main content area displays six project cards, each with a title, description, difficulty level, recognition type, tags, and a "Download" button.

Machine learning projects

These projects are downloadable step-by-step guides, with explanations and colour screenshots for students to follow.

Each project is a stand-alone activity, written to last for a single lesson, and will guide children to create a game or interactive project that demonstrates a real-world use of artificial intelligence and machine learning.

Suggestions for new worksheets, suggestions of improvements to any of the worksheets, or contributions of new project worksheets, are all very welcome.

All project types All difficulties All make types

Smart Classroom
Create a smart assistant in Scratch that lets you control virtual devices.
Teach a computer to recognise the meaning of your commands
Difficulty: Beginner Recognising: **text**
Tags: digital assistants, supervised learning [Download](#)

Make me happy
Create a character in Scratch that smiles if you say nice things to it and cries if you say mean things to it.
Teach a computer to recognise compliments and insults
Difficulty: Beginner Recognising: **text**
Tags: sentiment analysis, supervised learning [Download](#)

Snap!
Make a card game in Scratch that learns to recognise pictures of your card.
Teach a computer to recognise what icons look like
Difficulty: Beginner Recognising: **images**
Tags: image classification, supervised learning [Download](#)

Chameleon
Make a chameleon in Scratch that

Mailman Max
Make a postal sorting office in

Car or cup
Train the computer to be able

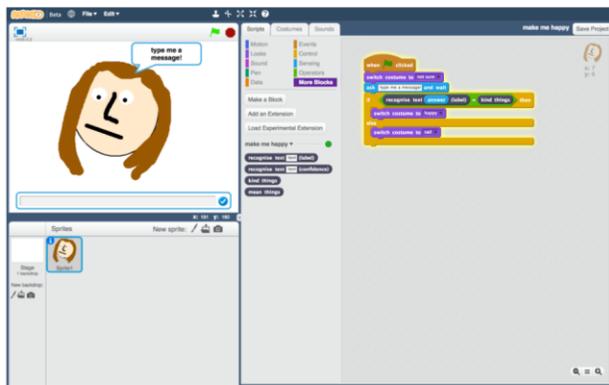
Make me happy

In this project you will make a character that reacts to what you say.

If you compliment it, it will look happy.
If you insult it, it will look sad.

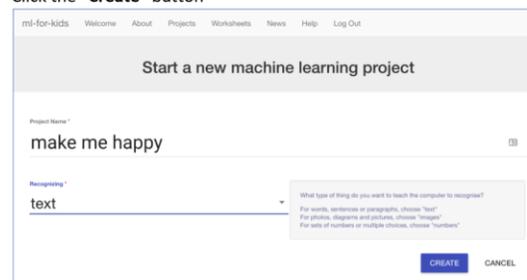
At first, you'll program a list of rules for what is kind and what is mean, and learn why that approach isn't very good.

Next, you will teach the computer to recognise kind messages and mean messages by giving it examples of each.



 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. 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 or group leader to create one for you.
If you can't remember your username or password, ask your teacher or group leader 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 "make me happy" and set it to learn how to recognise "text".
Click the "Create" button



7. You should now see "make me happy" in the list of your projects.
Click on it.

FOLLOW ALONG ON THE WORKSHEET

EXTRA CREDIT

Check out Ideas and Extensions

Pick another project @
<https://machinelearningforkids.co.uk>

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?

Write a reply

Instead of just changing the way they look, make your character reply, based on what it recognises in the message!

Try a different character

Instead of a person's face, why not try something different, like an animal?

It could react in different ways, instead of smiling.

For example, you could make a dog that wags their tail if you say something kind to it!

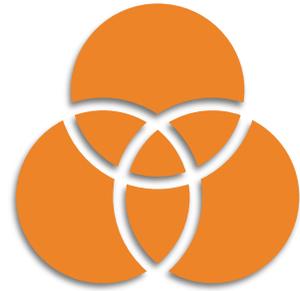
Different emotions

Instead of kind and mean, could you train the character to recognise other types of message?

Real world sentiment analysis

Can you think of examples where it's useful to be able to train a computer to recognise the emotion in writing?

CONCEPTS



Sentiment Analysis



Supervised Learning

**Did you learn
anything
new?**

**Was this a
good spend
of an hour?**

QUICK SURVEY