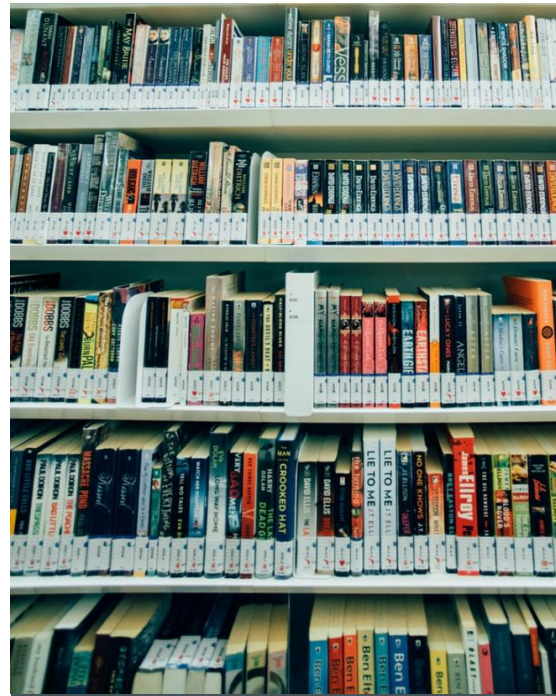
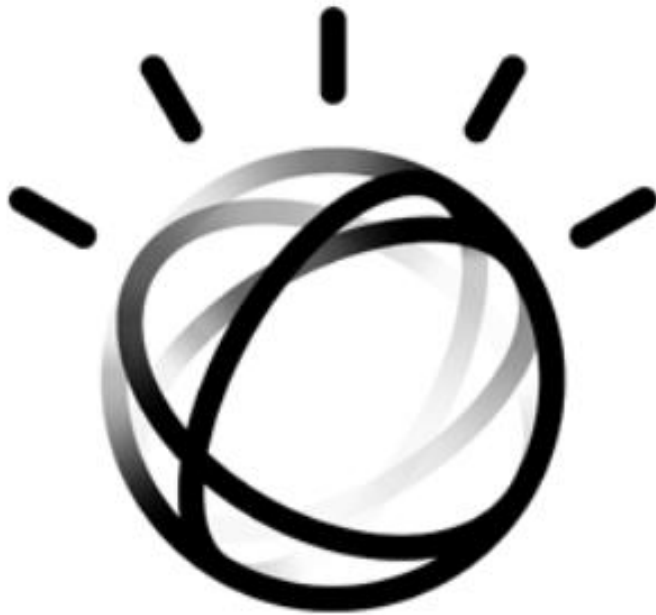


TRAIN YOUR COMPUTER WITH MACHINE LEARNING

JUDGE A BOOK BY ITS COVER

AN IBM VOLUNTEERS ACTIVITY



DEE

@STEMDEEP

DEEPSTEM.WORDPRESS.COM

MAR 17 2019

COOPER SIEGEL COMMUNITY LIBRARY

LET'S GET TO
KNOW EACH
OTHER!

Your
Name



Your
Grade




Your
School



QUICK SURVEY


Programming

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



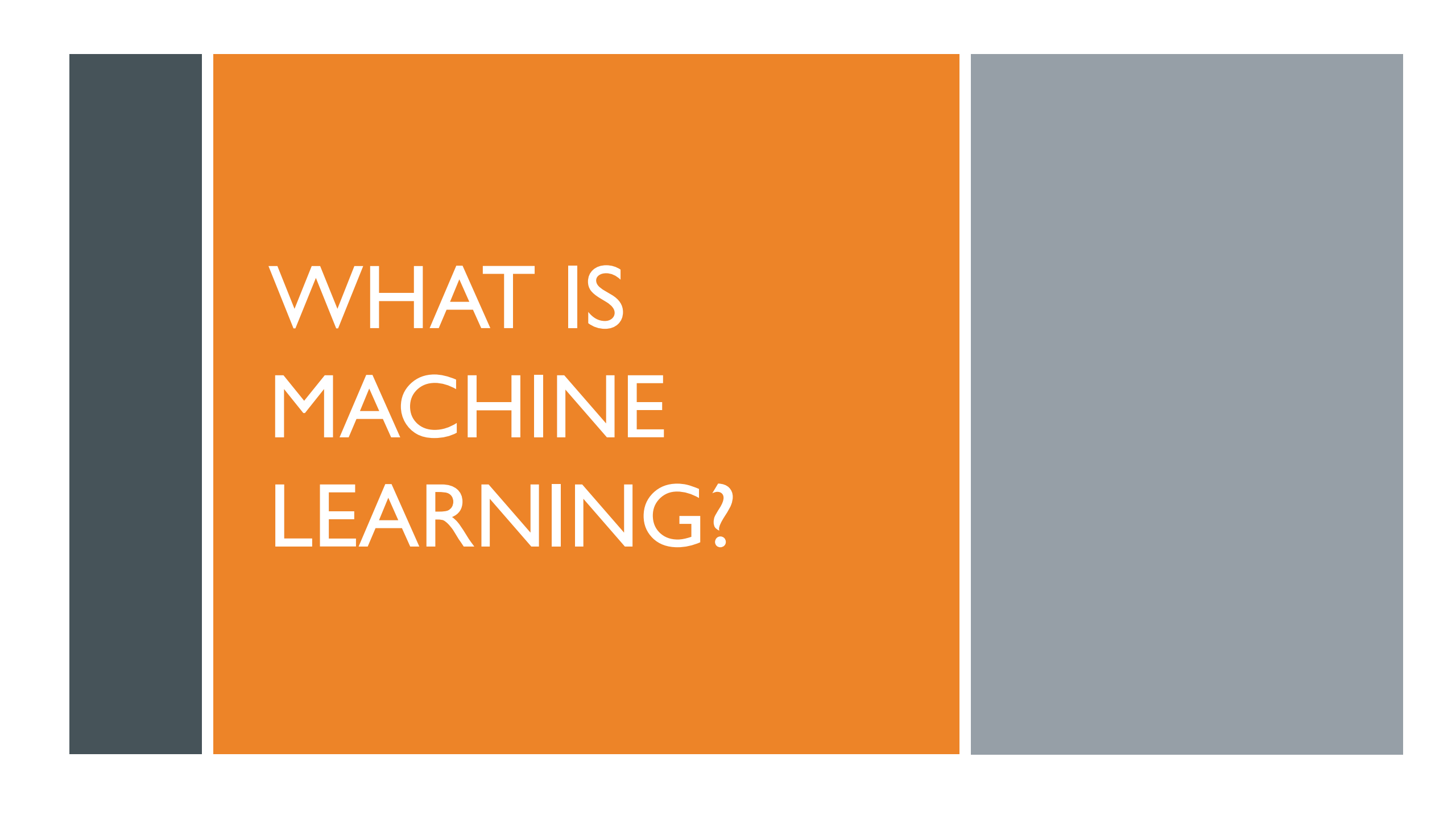
QUICK SURVEY

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: Train a machine learning model to recognize and classify images of book covers by genre. We will then test the machine learning model against a human using a Scratch Project.

PROGRAMMING

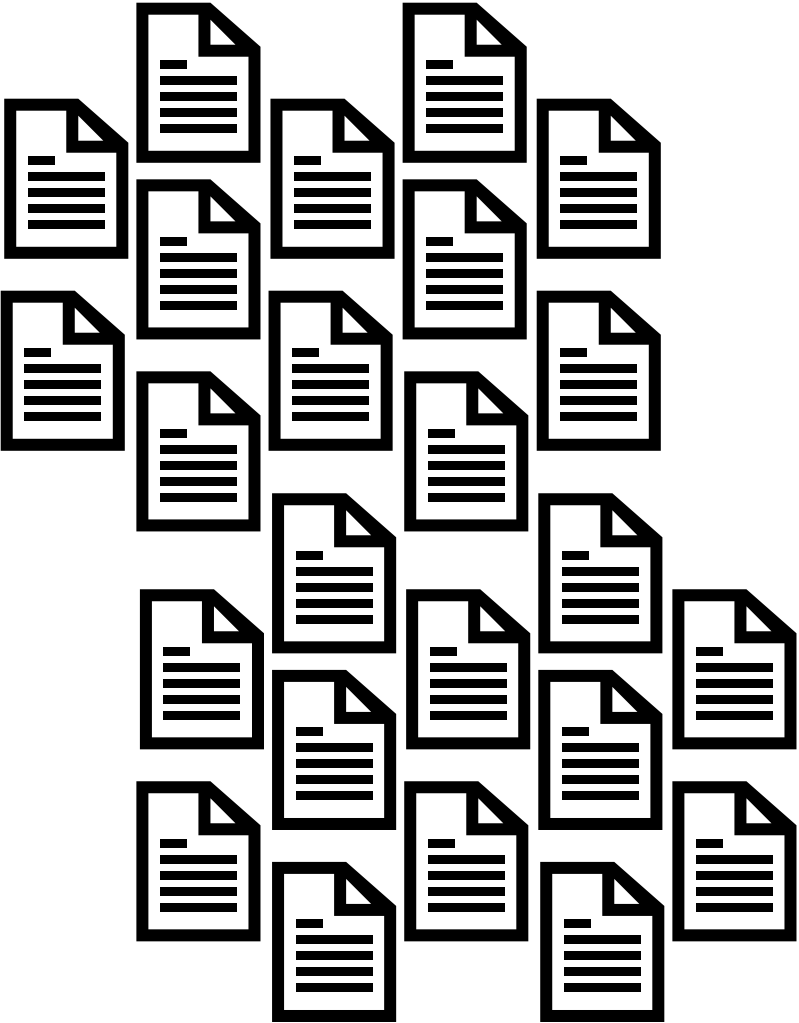
BREAKING
DOWN A
TASK INTO A
SERIES OF
STEPS THAT
CAN BE
FOLLOWED

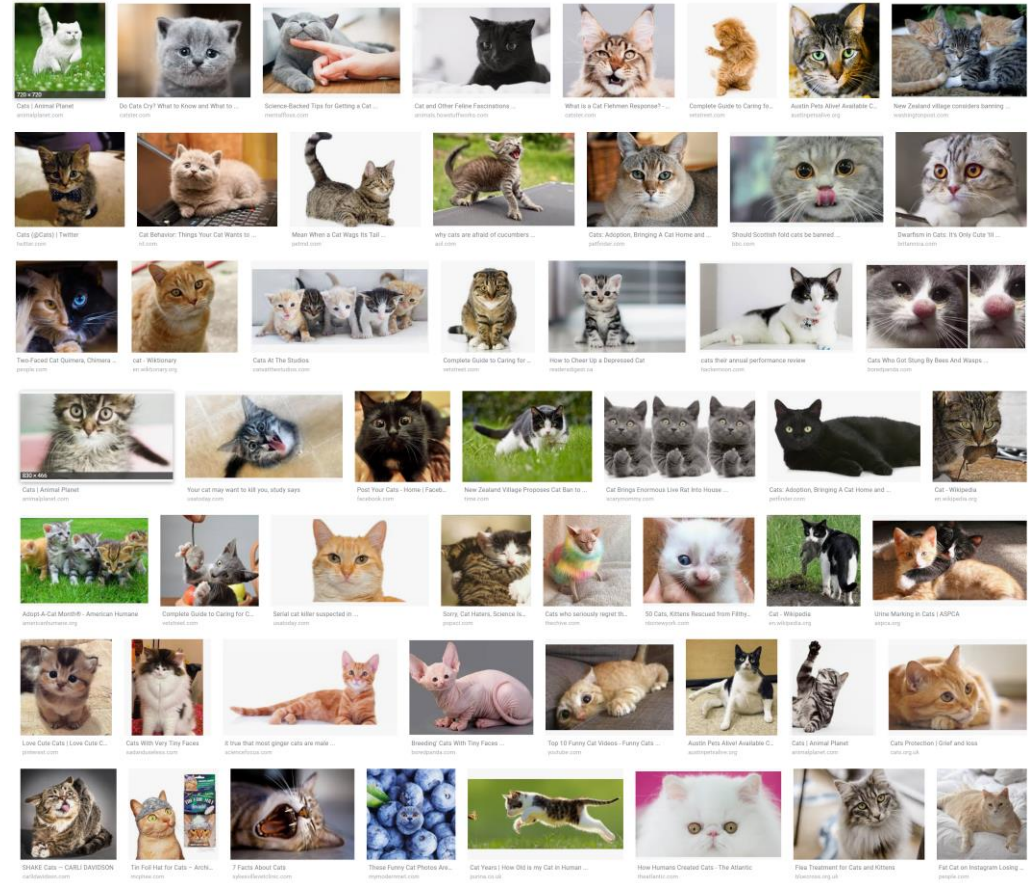

```
when clicked
go to x: 0 y: 90
delete all of Players
delete all of Player ID
forever
  if screen = title then
    show
  else
    hide
```

```
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.



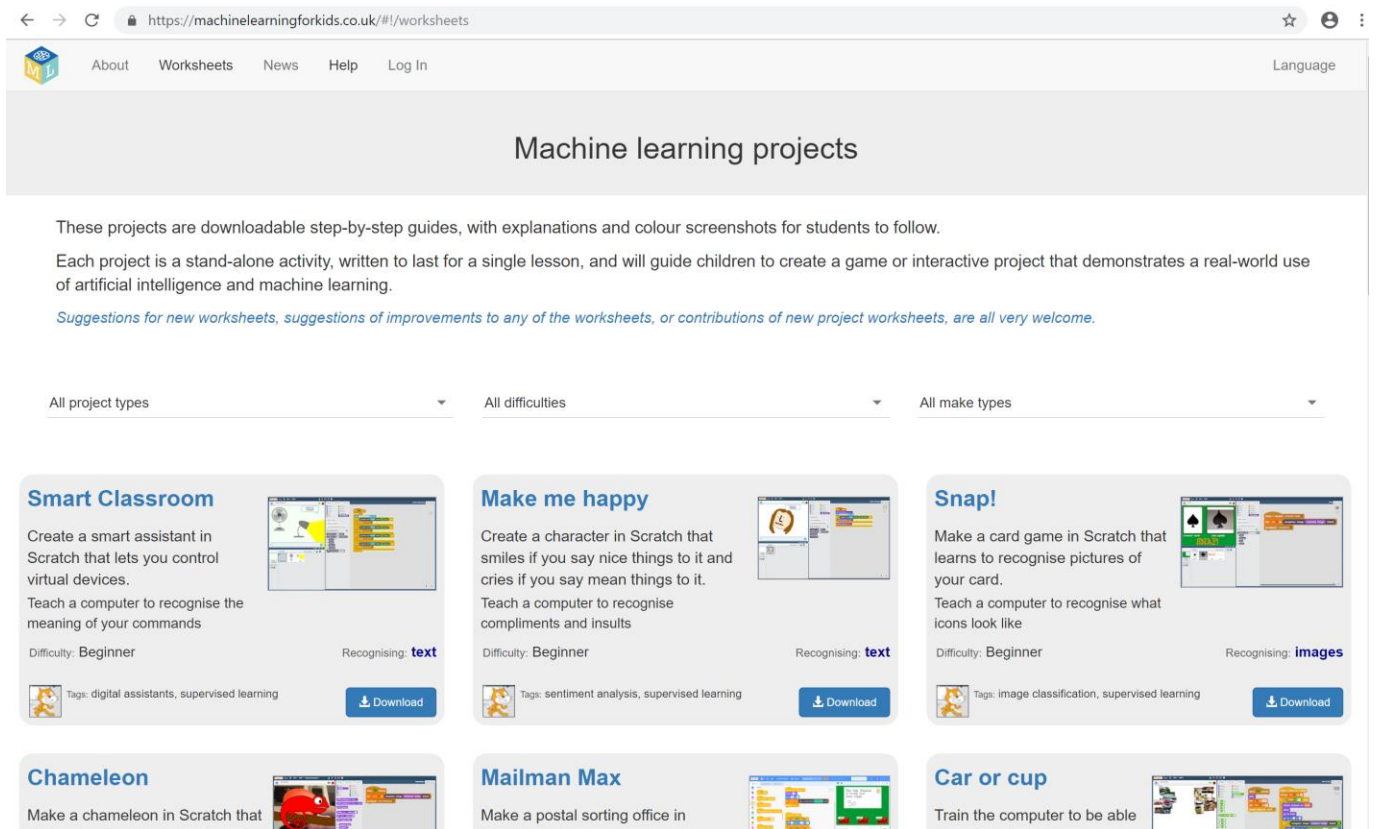
GOAL:
BUILD A MACHINE
LEARNING MODEL TO
GUESS WHETHER A BOOK IS
A FAIRY TALE OR A MYSTERY
BOOK BASED ON ITS
COVER

HANDS-ON ACTIVITY

- Create Watson machine learning model with any two genres
 - **Fairy Tales, Mysteries**, Graphic Novels, Picture Books, Non-Fiction
- Train the model with images of book covers
 - Find 20 examples of book covers for each of the two genres
 - Copy links to 20 images of each genre from the Carnegie Library Catalog
 - Save 5 images of each genre from the Carnegie Library Catalog
 - Secret tips for choosing images (and winning)
- Open Judge a Book Scratch Project
- Edit the project to reflect the two genres and connect to your model
- Test the Scratch Project
- Compete with a human!

LET'S GET STARTED!

<https://machinelearningforkids.co.uk>



The screenshot shows a web browser window with the URL <https://machinelearningforkids.co.uk/#1/worksheets>. The page title is "Machine learning projects". Below the title, there is a paragraph explaining that the projects are downloadable step-by-step guides with explanations and screenshots. It also states that each project is a stand-alone activity for a single lesson. A blue italicized line of text invites 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. The projects are: "Smart Classroom" (text recognition), "Make me happy" (text recognition), "Snap!" (image recognition), "Chameleon" (image recognition), "Mailman Max" (image recognition), and "Car or cup" (image recognition).

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

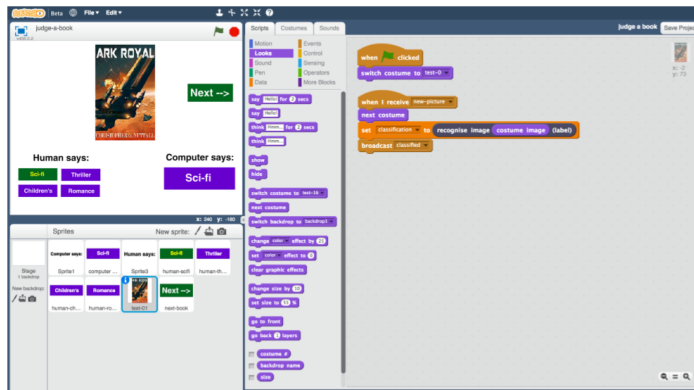


Judge a book

In this project, you will investigate whether it's really possible to judge a book by its cover.

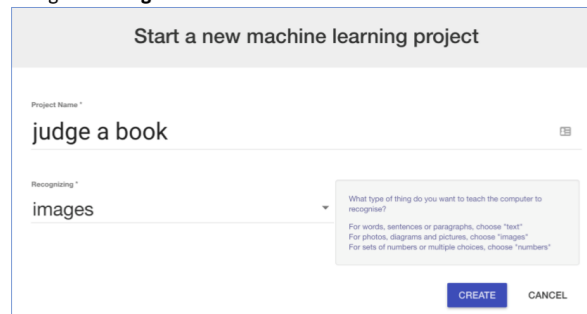
You will make a game in Scratch for a friend to compete against your computer to see who is better at guessing the genre of a book based only on its cover.

To do this, you'll first need to train your computer to recognise book covers.

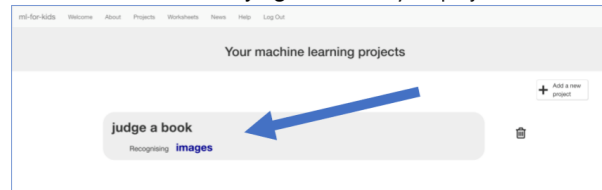


This project worksheet is licensed under a Creative Commons Attribution Non-Commercial Share-Alike License <http://creativecommons.org/licenses/by-nc-sa/4.0/>

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.
4. Click on "Projects" on the top menu bar
5. Click the "+ Add a new project" button.
6. Name your project "judge a book" and set it to learn how to recognise "images". Click "Create"



7. You should now see "judge a book" in your projects list. 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?

Keeping score

Can you update the Scratch game so that it keeps score?

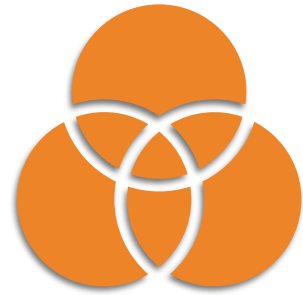
Is the computer as good at recognising book genres as the people that you can get to test it?

Alternative project ideas

Instead of book covers, why not try:

- album covers – train a computer to recognise the music genre of an album from a picture of the cover – do pop music albums look different from rap albums?
- movie posters – train a computer to recognise the type of movie based on a picture of the poster – do action movie posters look different from period drama movie posters?

CONCEPTS



Sentiment Analysis



Supervised Learning

**What did
you learn?**

**Will you
come back?**

QUICK SURVEY