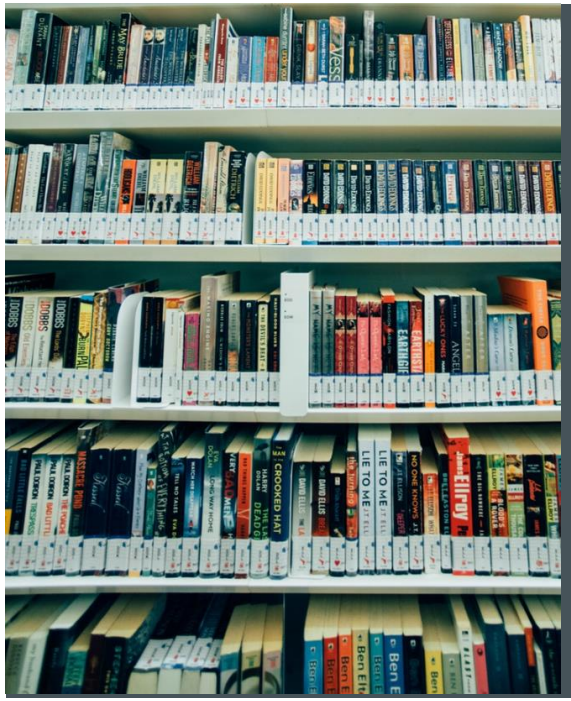
TRAIN YOUR COMPUTER WITH MACHINE LEARNING

JUDGE A BOOK BY ITS COVER

AN IBM VOLUNTEERS ACTIVITY



DEE

@STEMDEEP

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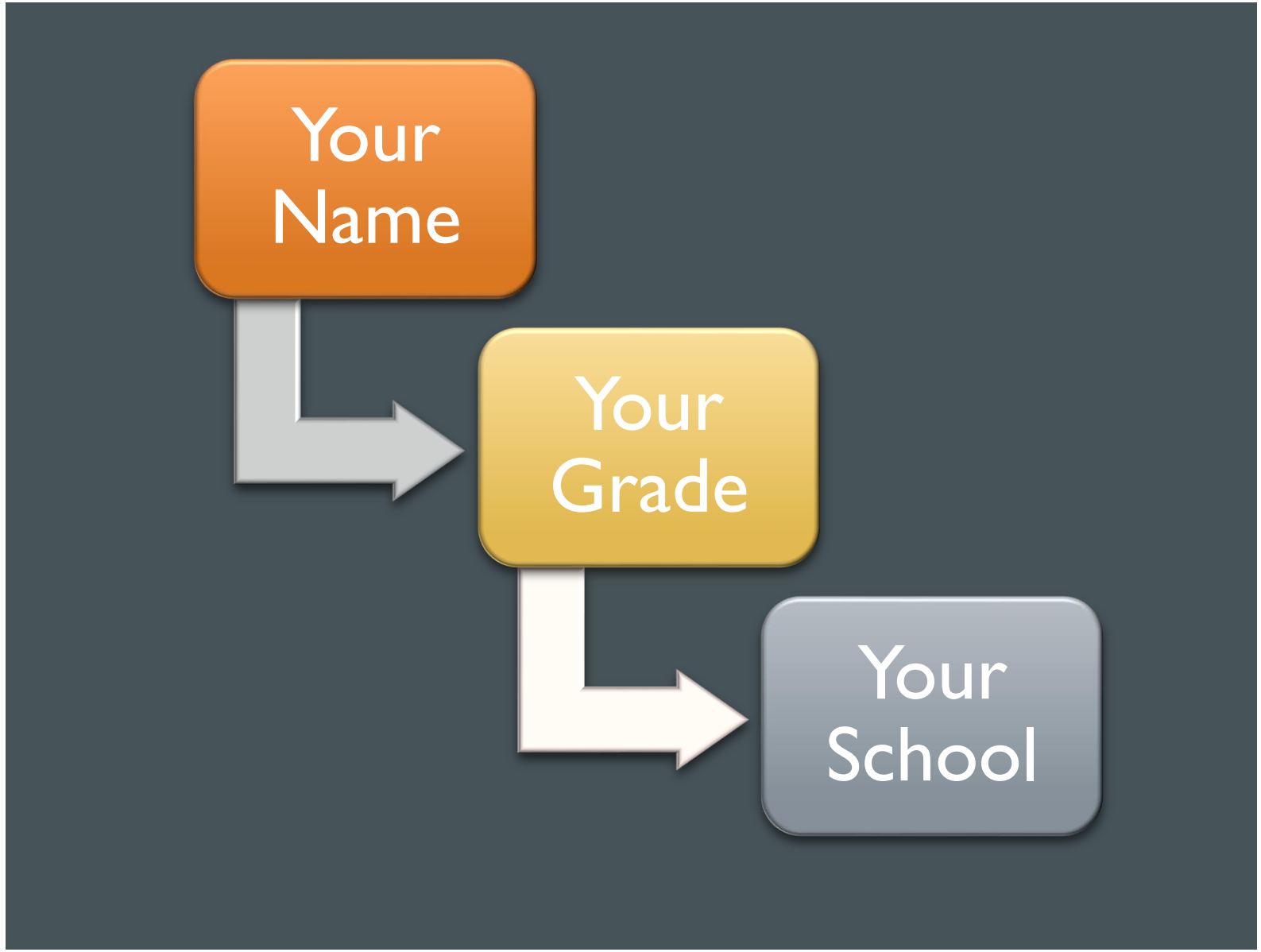
COOPER SIEGEL COMMUNITY LIBRARY

LET'S GET TO KNOW EACH OTHER!



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?

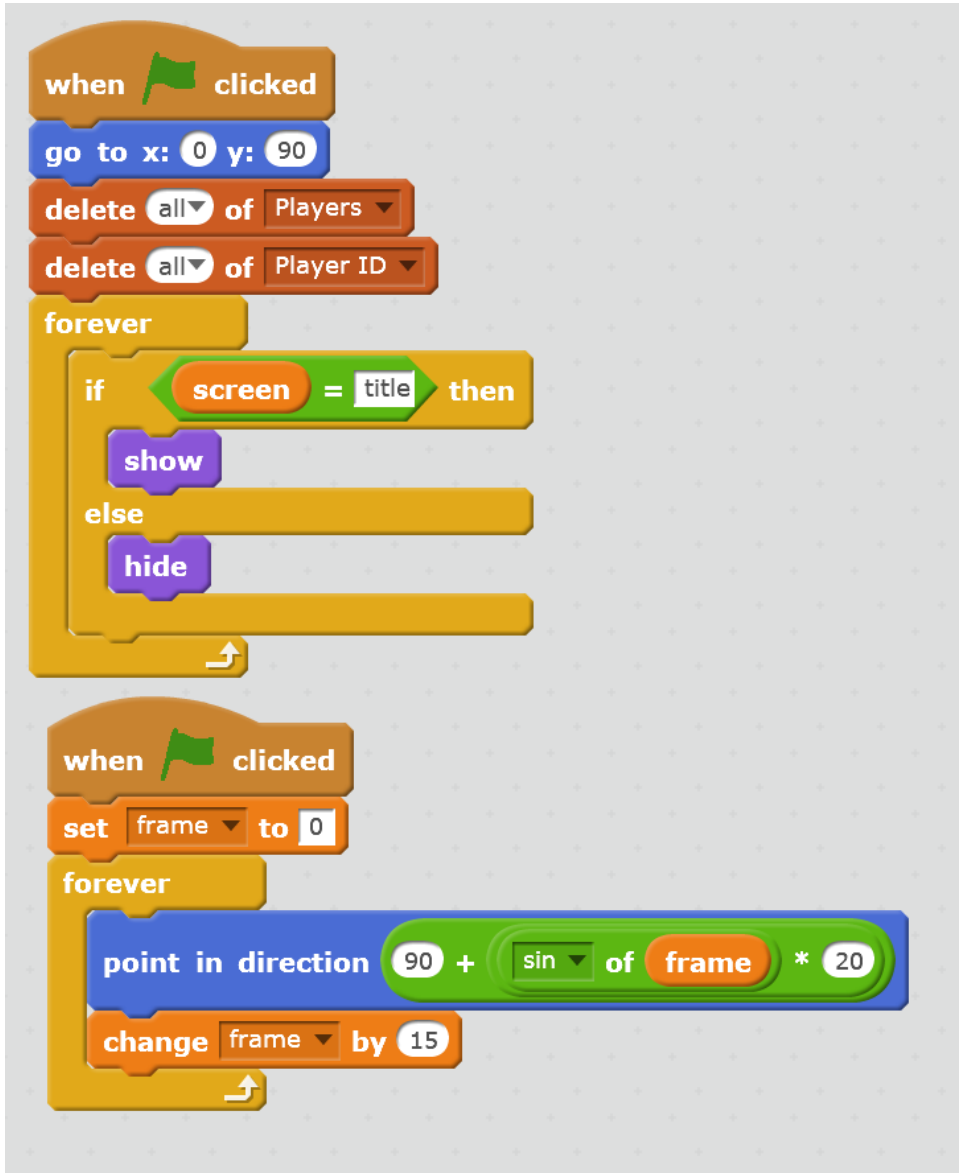
WHAT IS MACHINE LEARNING?

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.

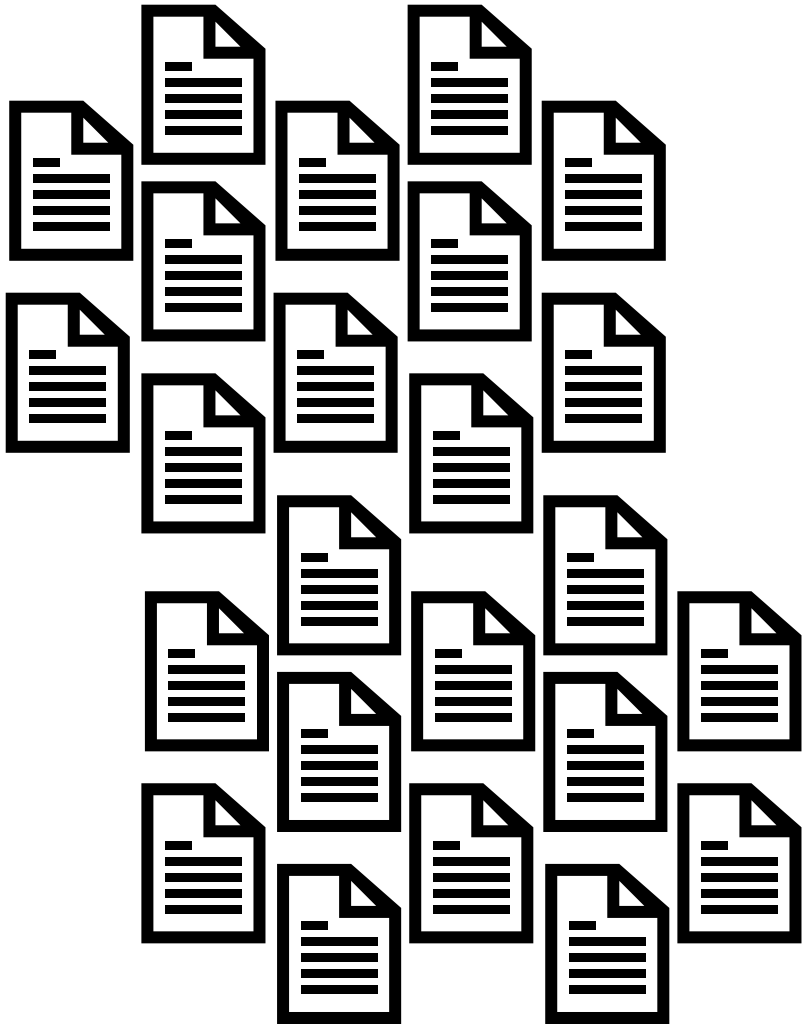
PROGRAMMING

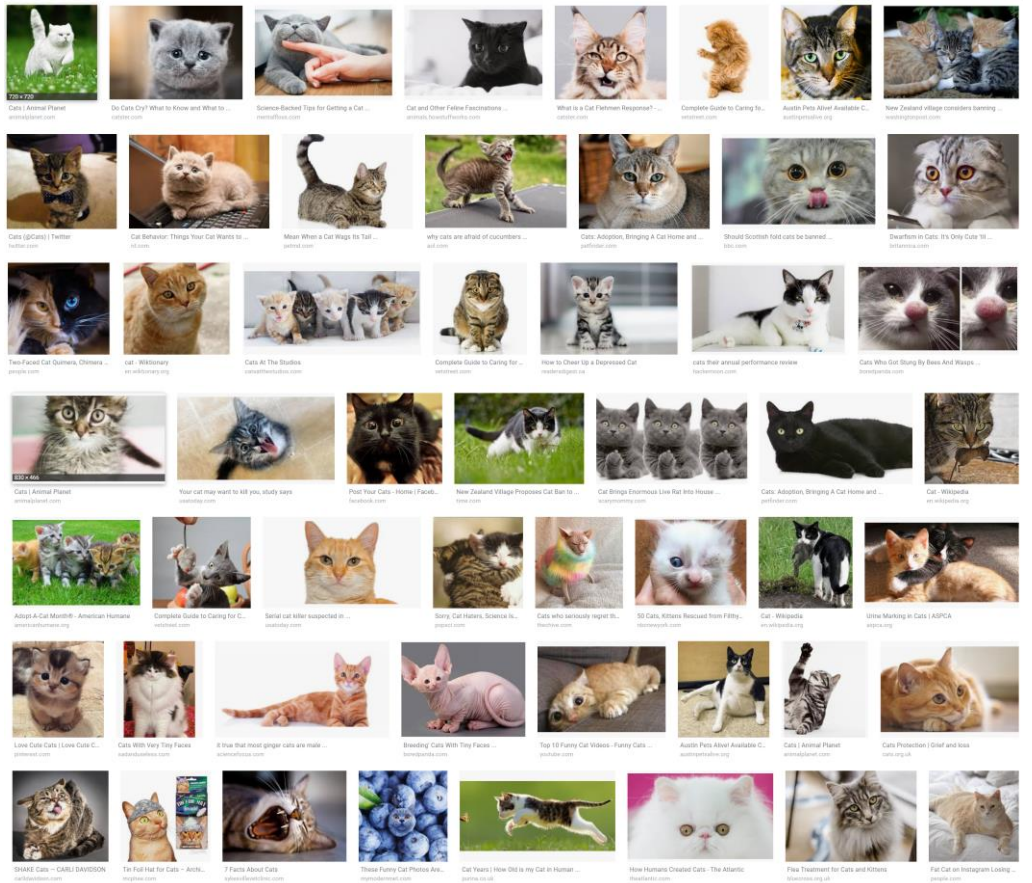
BREAKING DOWN A TASK INTO A SERIES OF STEPS THAT CAN BE FOLLOWED


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 eve 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.

ibm.com/Watson/products-services

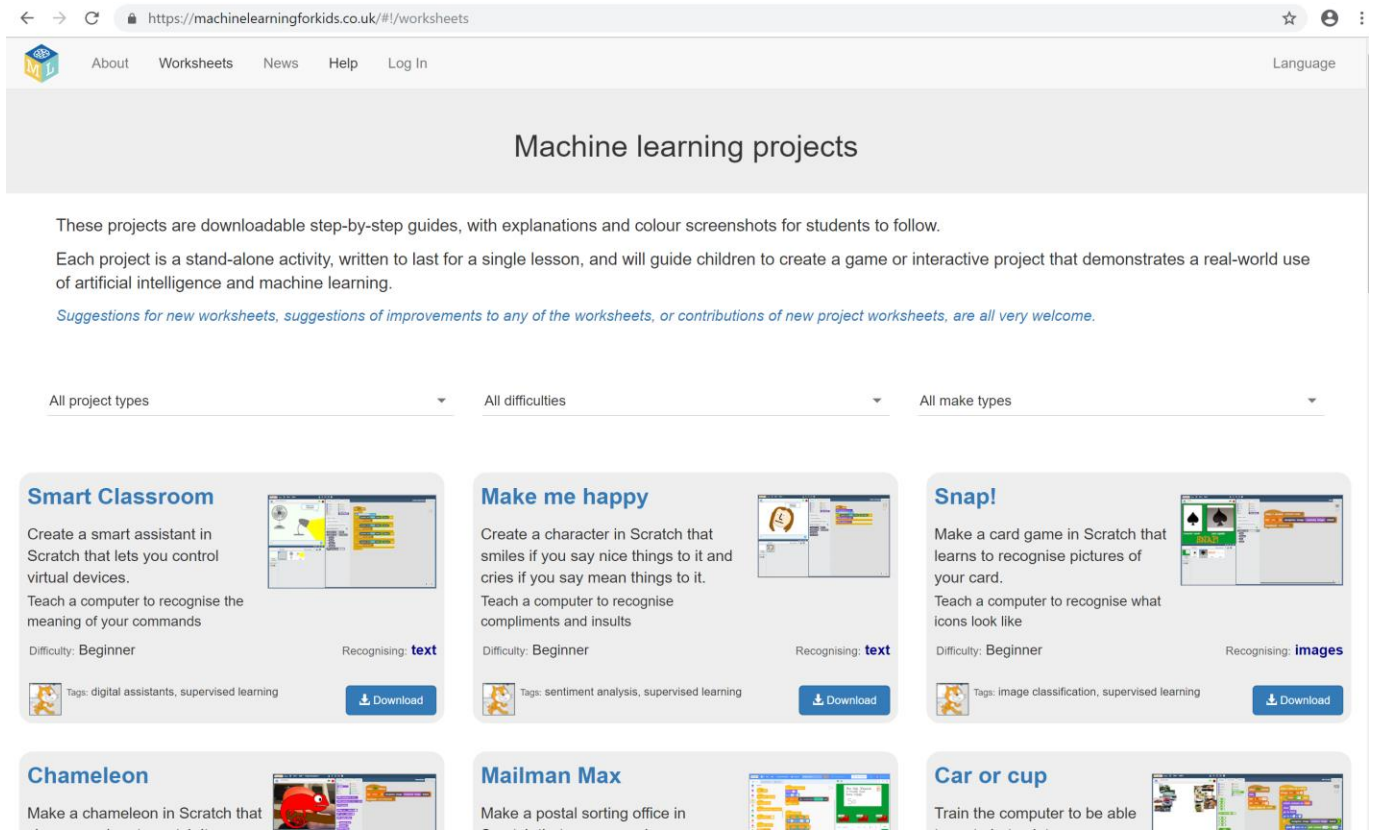
GOAL:
BUILD A MACHINE LEARNING MODEL TO GUESS WHETHER A BOOK IS A FAIRY TALE OR A MYSTERY BOOK BASED ON ITS COVER

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

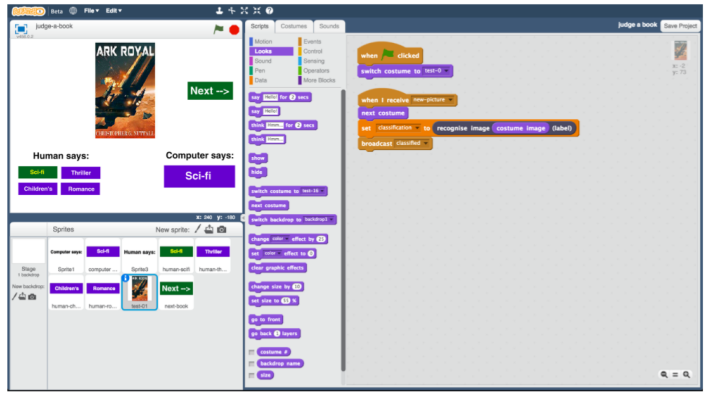


Judge a book

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

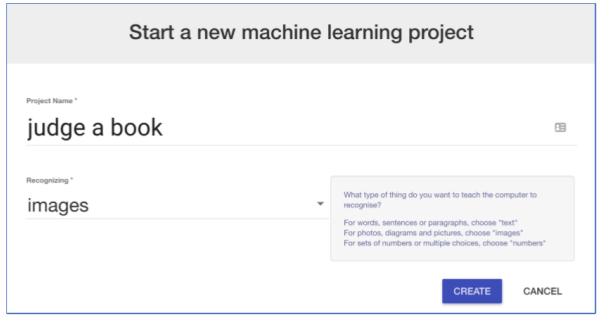
2. Click on "**Get started**"

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.

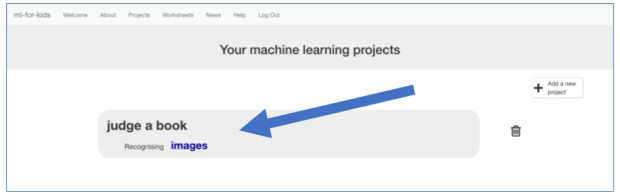
4. Click on "**Projects**" on the top menu bar

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?

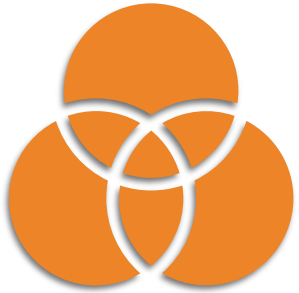
Is the computer as good at recognising book genres as the people that you can get to test it?

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