Empowering the AI Teacher

Understanding and effectively teaching about Artificial Intelligence

Who are we?



Pat Virtue

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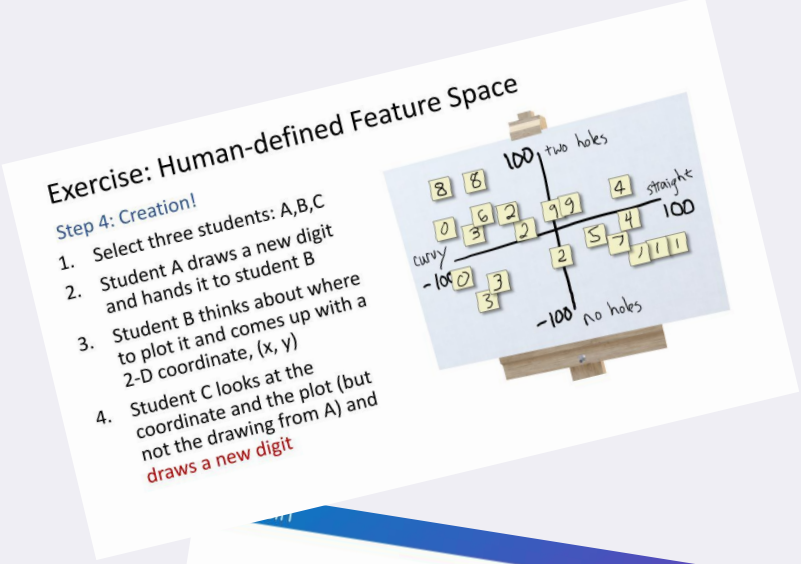


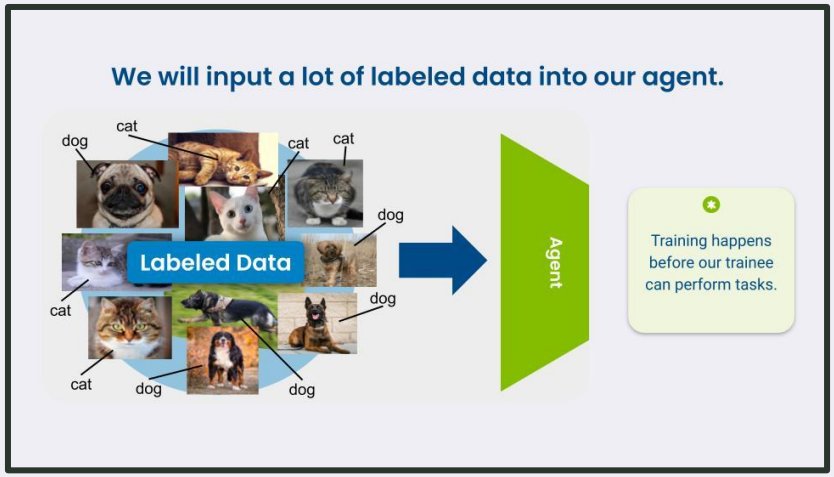
Christine Nguyen

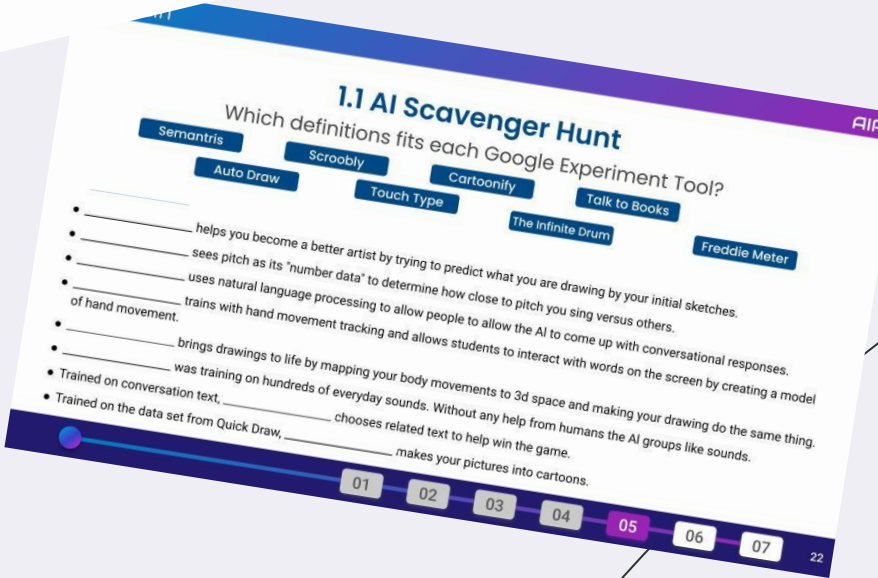
STEAM Director
Sarah Heinz House

“AI is the new electricity”

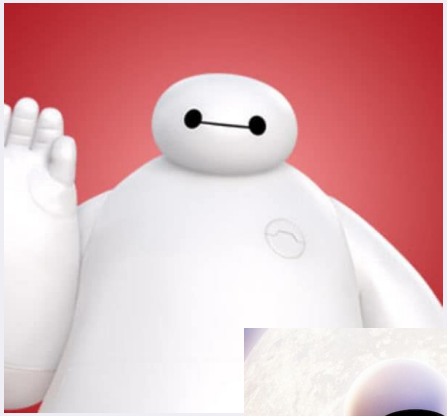
Dr. Andrew Ng

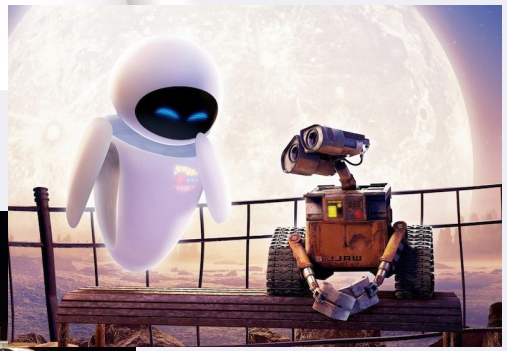


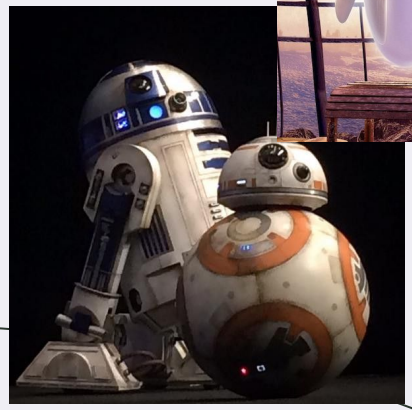




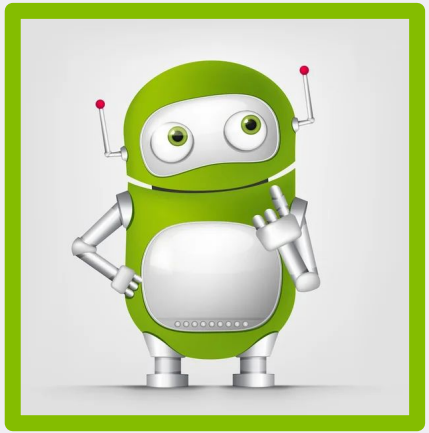
Goal: Make AI more accessible







Today’s Goals



Learn about AI

We will look at what we have honed down to the core principles of AI

Learn about teaching AI

Walk away with ways to teach AI that will make sense to your student.

Most Important

- Artificial Intelligence can’t do general AI yet, but it is constantly changing
- Artificial Intelligence hinges on the idea of intelligence
  - Intelligence is not binary
  - Uncertainty and decision making play a big part in AI
- Artificial Intelligence uses lots of data
  - The AI “learns” through data

What is AI?

Reviewing Intelligence and AI

What makes them Artificial Intelligence (AI)?







They are all robots that think and act like people!

Let’s talk about Intelligence

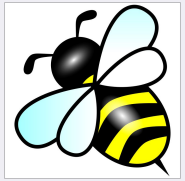


vs



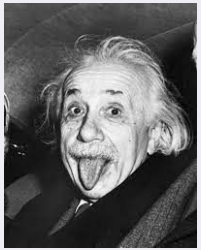


vs





vs

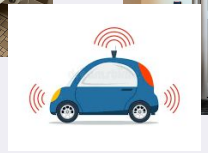


- Which one is more intelligent?
- What determines which is more intelligent?
- Which one is artificial?
- What is an intelligent aspect of each item?

Can you place these in order of intelligence?







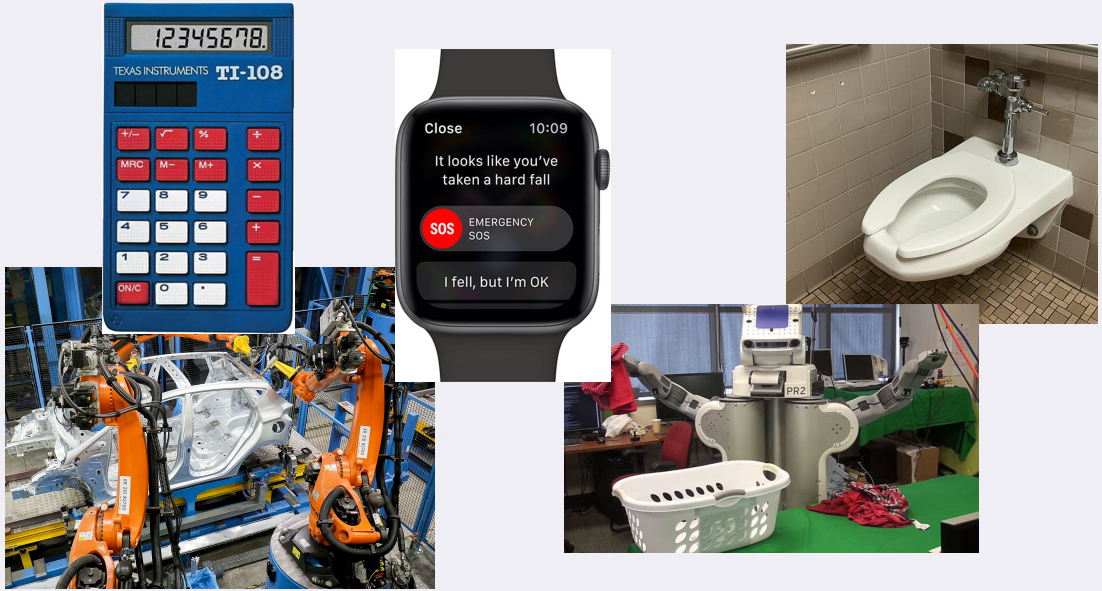






What are the attributes of intelligence?

Can you place these in order of intelligence?



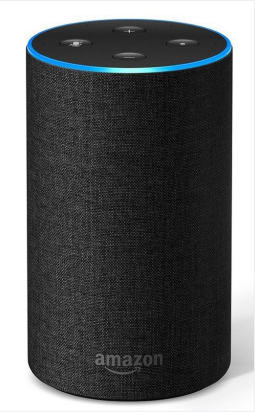
What are the attributes of intelligence?

The Input/Output Agent

Agent is an entity that perceives and acts



What is an Agent?



Speech Recognition

Audio goes in → **Some intelligent Agent "hears" words** → **Words/text come out**

Agent - a person or thing that takes an active role or produces a specific event

What is this?



Input	Agent	Output
Picture	Human	?

What is this?



Input	Agent	Output
Picture	Human	?

How did you know that??

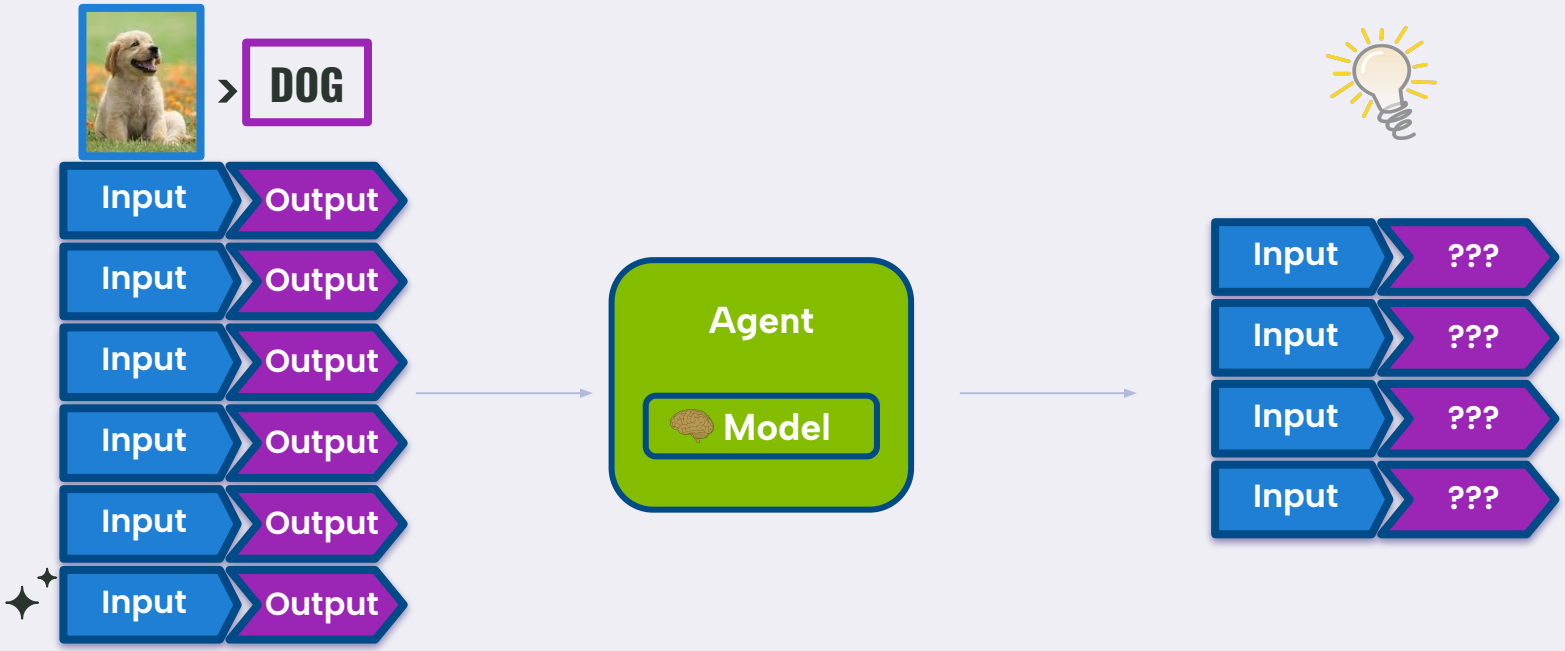





You have seen so many images of dogs and cats!
K-9 UNIT
You've been trained!



How did you become trained?



Do you know what this is?

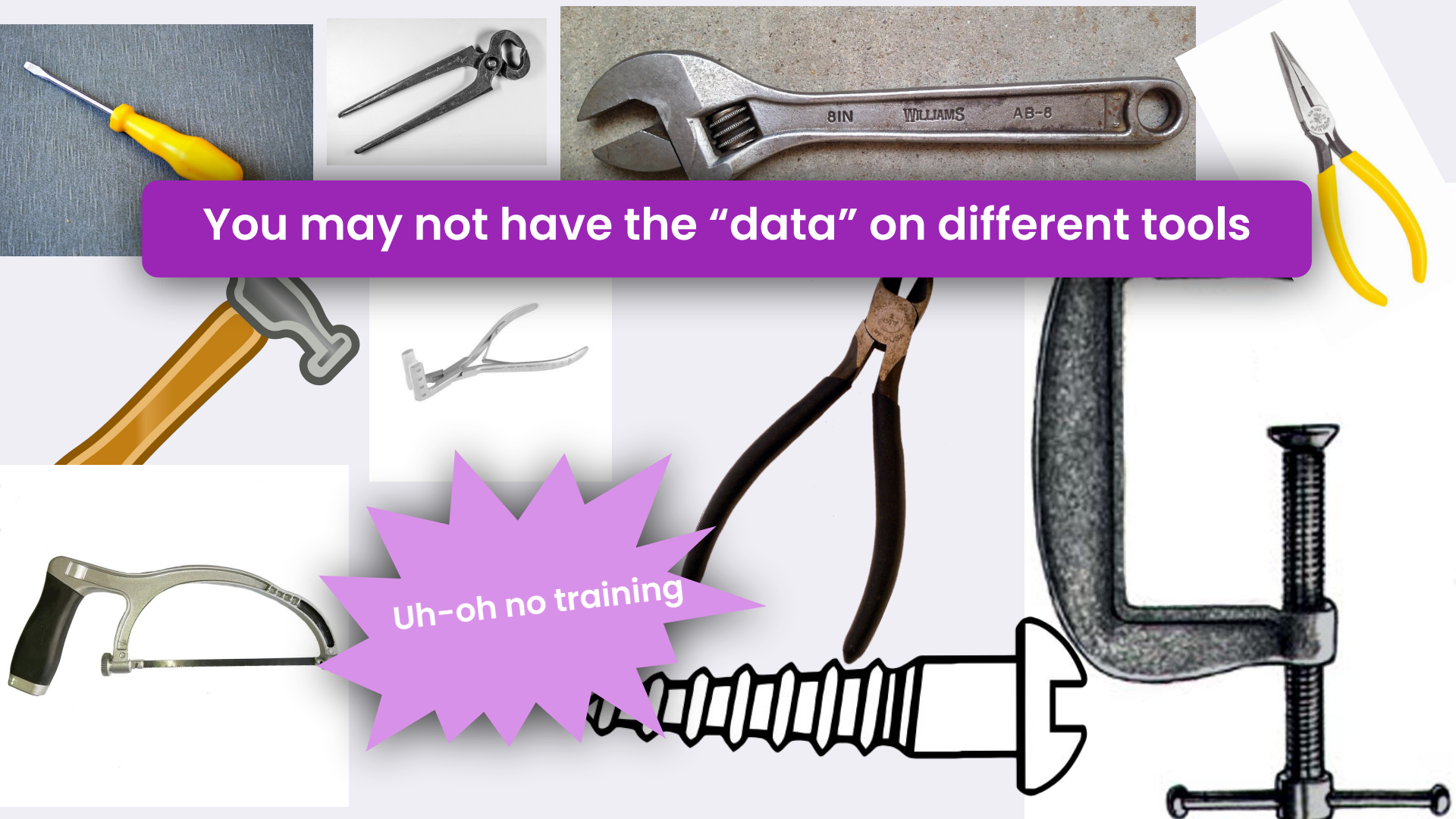


Input	Agent	Output
PICTURE	HUMAN	?

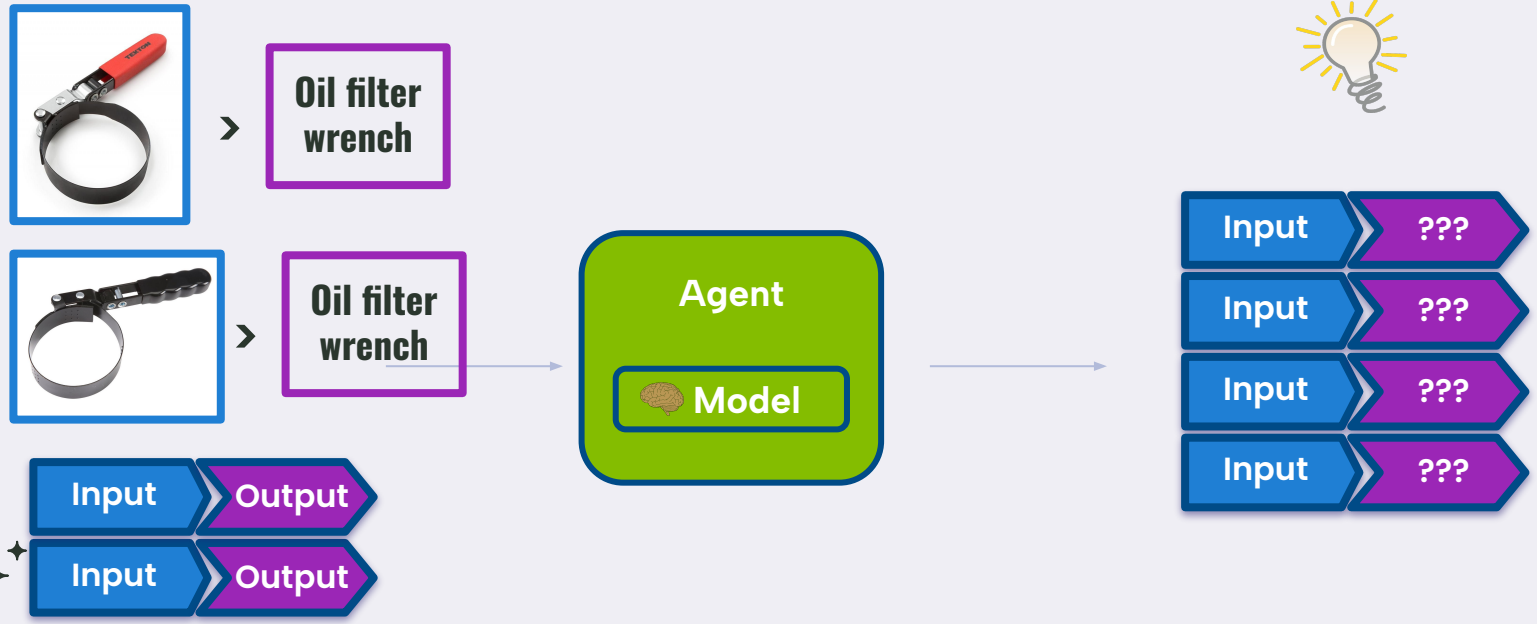
or this?



Input	Agent	Output
PICTURE	HUMAN	?


8IN
WILLIAMS
AB-8
You may not have the “data” on different tools
Uh-oh no training

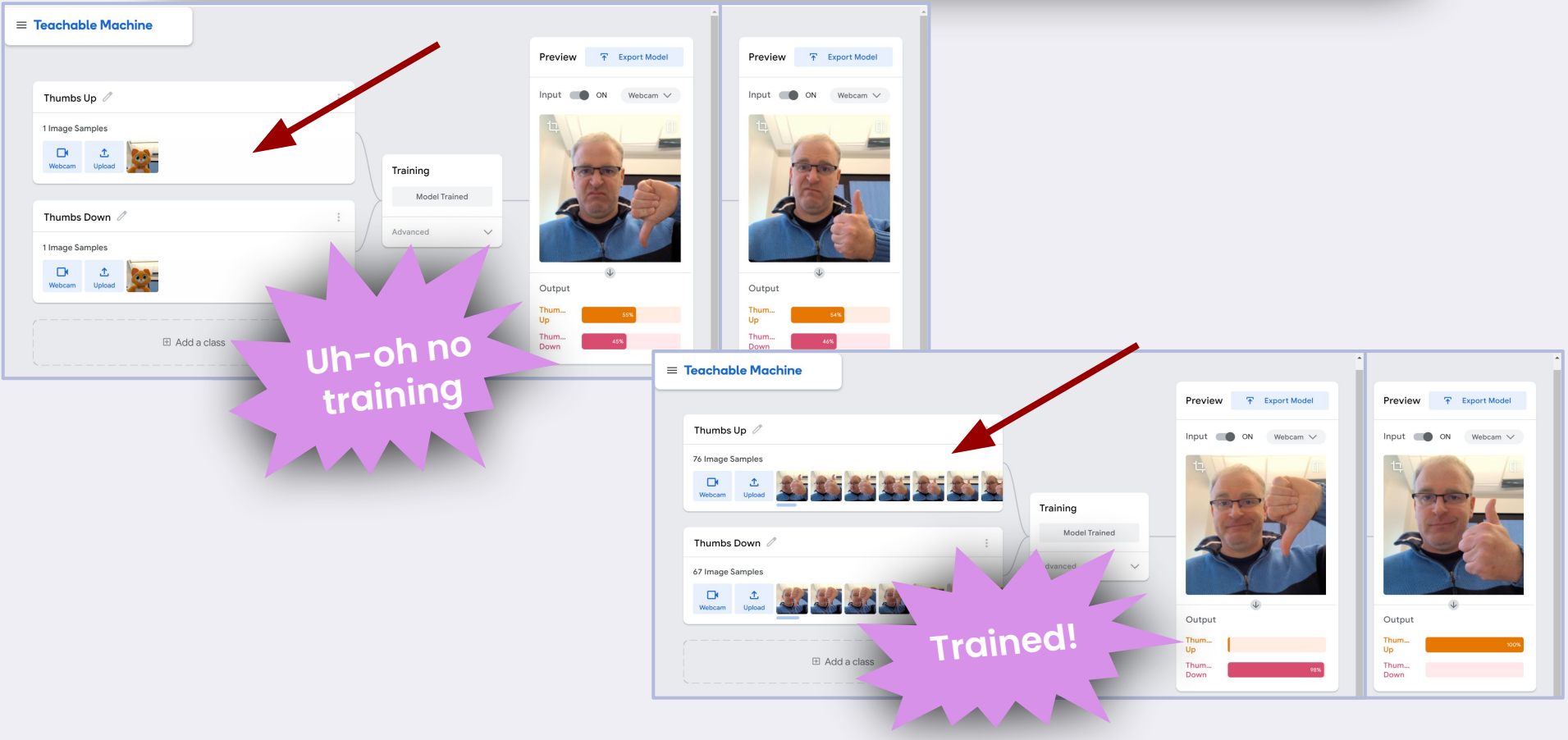
Providing the output answer with the input can help humans learn!



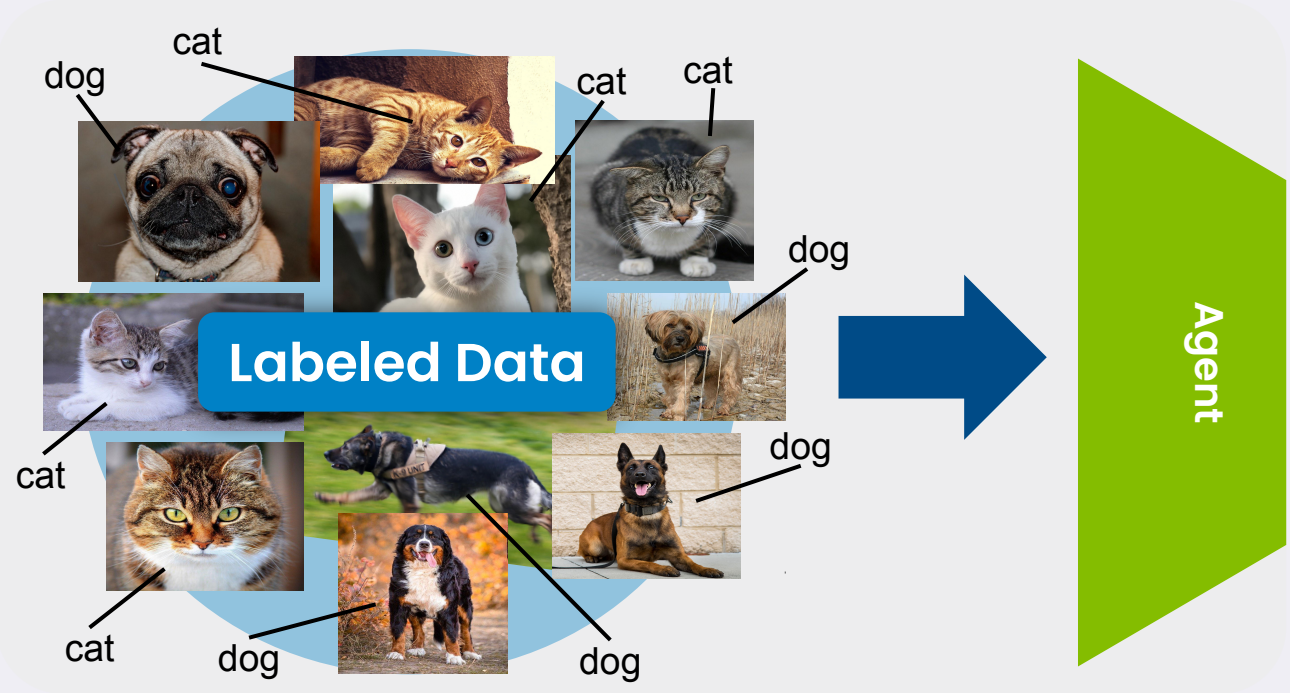
Now you might know the answer to what is this.



Machine need data to learn too!



We will input a lot of labeled data into our agent.

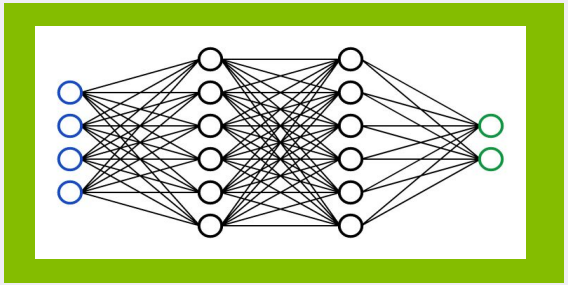


Training happens before our trainee can perform tasks.

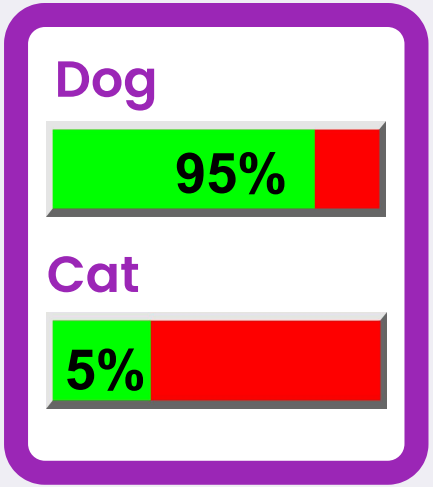
Once trained- our agent - should be able to predict with pretty good accuracy!



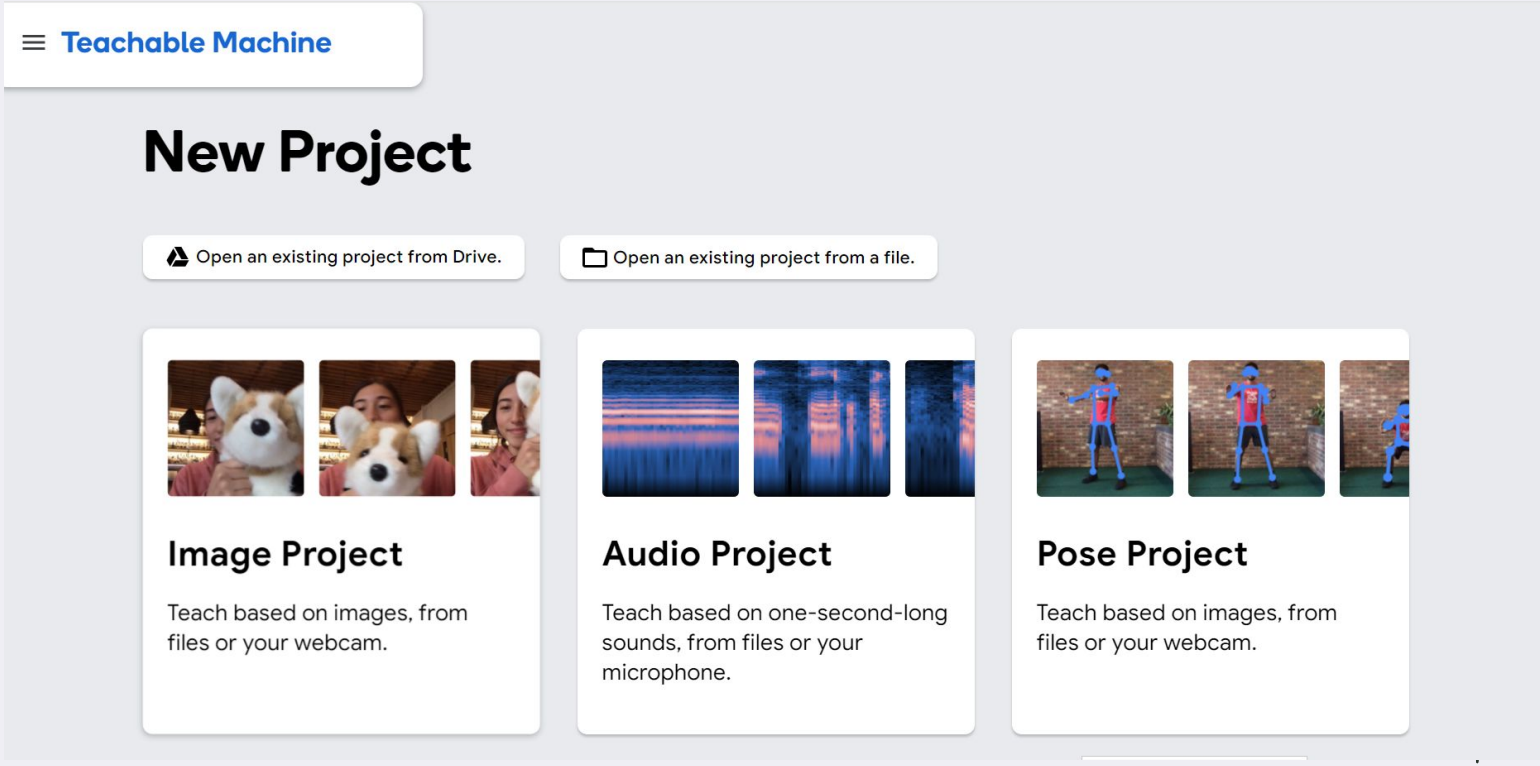
Input/Data



Output/Prediction

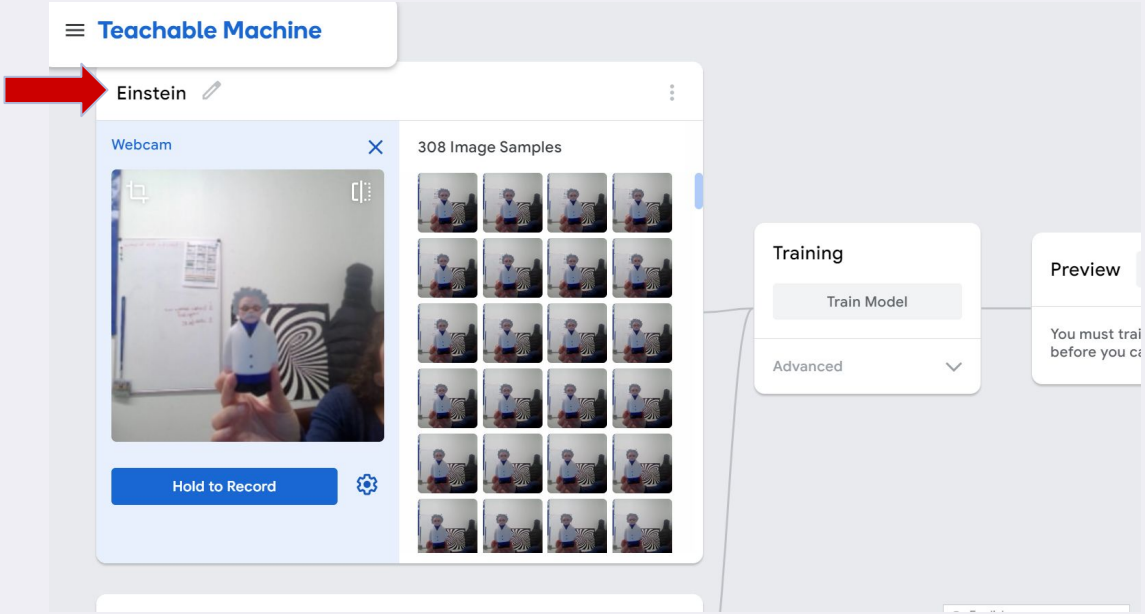


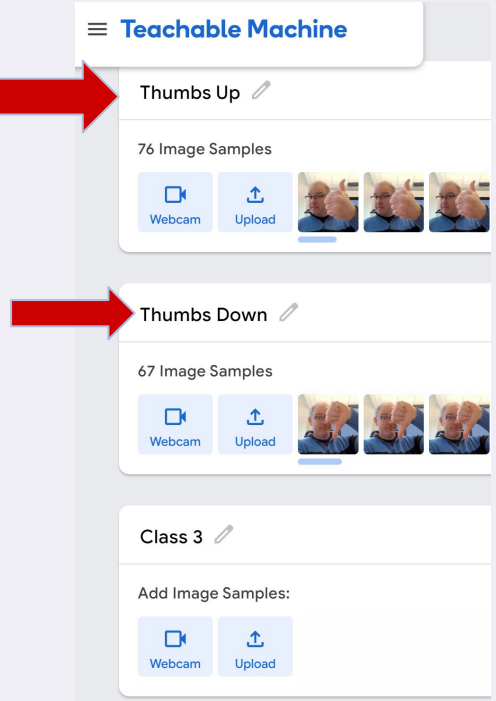
We will use Teachable Machine to complete our mission.



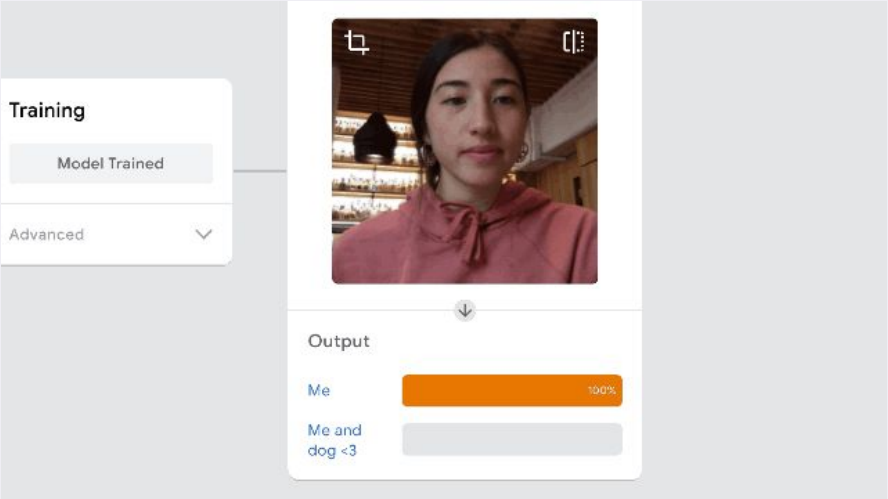
Give the Machine lots of Data (pictures!).

★ Don’t forget to give each class a label that represents the picture.





Initial Tests Test your machine



Train your Teachable Machine

Push the “Train Model” button and wait.

Test your design

Once trained, test your machine. What happens when you put the objects in front of the camera?

Come up with 2 ways to improve your design and run other tests.

Try adding another object. Can your machine recognize more than 3 objects at a time? Which objects in the classroom are easier for the machine to identify

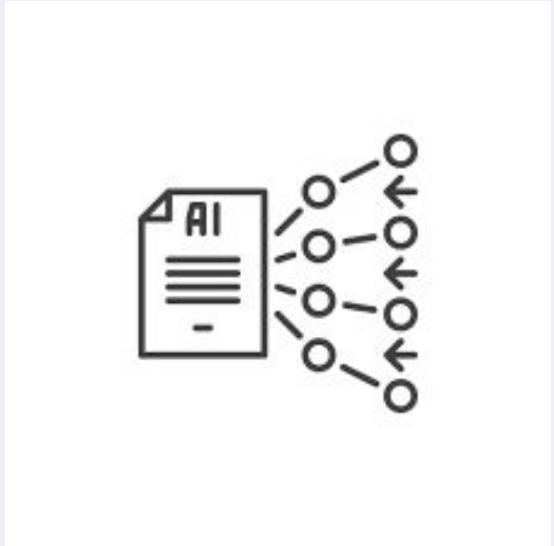
Text Generation

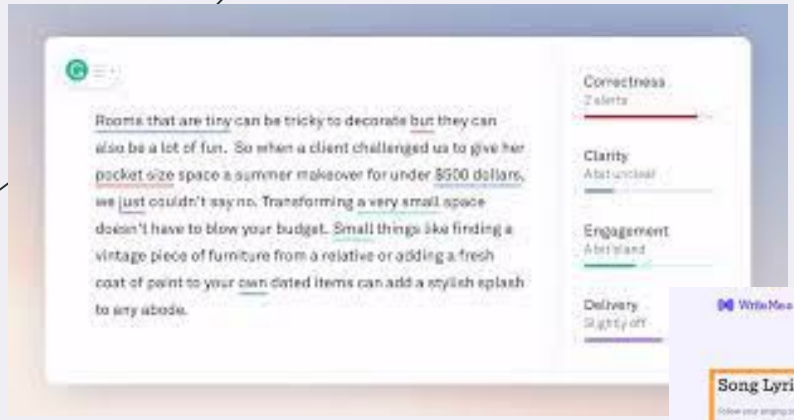
Teaching our robot to create sentences

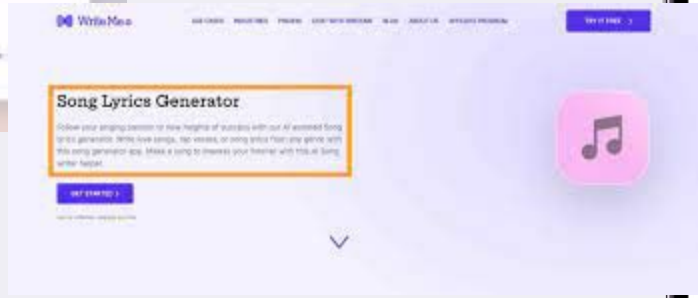
What is text generation?

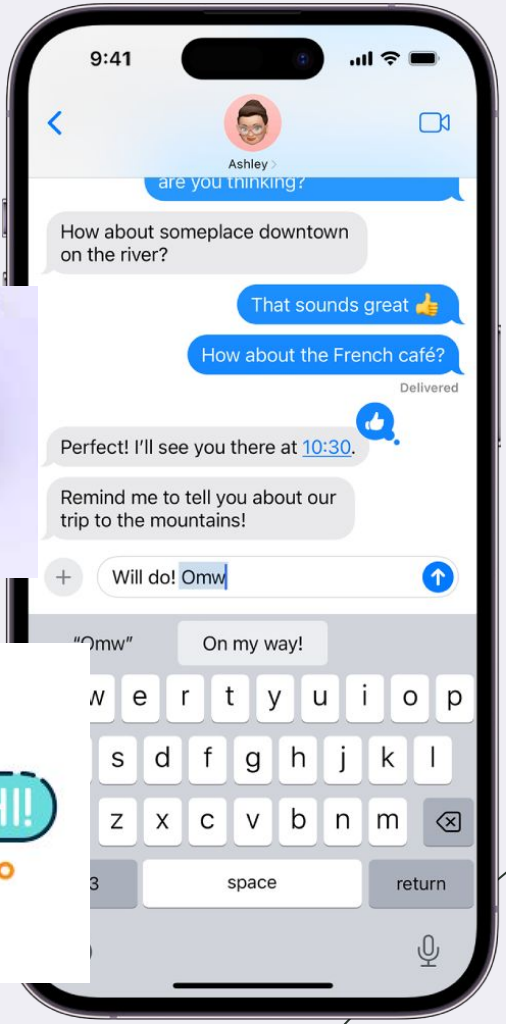
Text generation is having a machine create new text – this can happen in multiple ways.

Can you name some ways that AI generates text?




Rooms that are tiny can be tricky to decorate but they can also be a lot of fun. So when a client challenged us to give her pocket size space a summer makeover for under $500 dollars, we just couldn't say no. Transforming a very small space doesn't have to blow your budget. Small things like finding a vintage piece of furniture from a relative or adding a fresh coat of paint to your own dated items can add a stylish splash to any abode.
Correctness
Clarity
Engagement
Delivery


Song Lyrics Generator


9:41
Ashley
are you thinking?
How about someplace downtown on the river?
That sounds great
How about the French café?
Delivered
Perfect! I'll see you there at 10:30.
Remind me to tell you about our trip to the mountains!
Will do! Omw
"Omw"
On my way!
space
return


May be an image of 1 person, standing, and Machu Picchu
May be an image of 5 people, including Jay Youmens, people playing musical instruments, people standing, 2 hats, and 5 drums

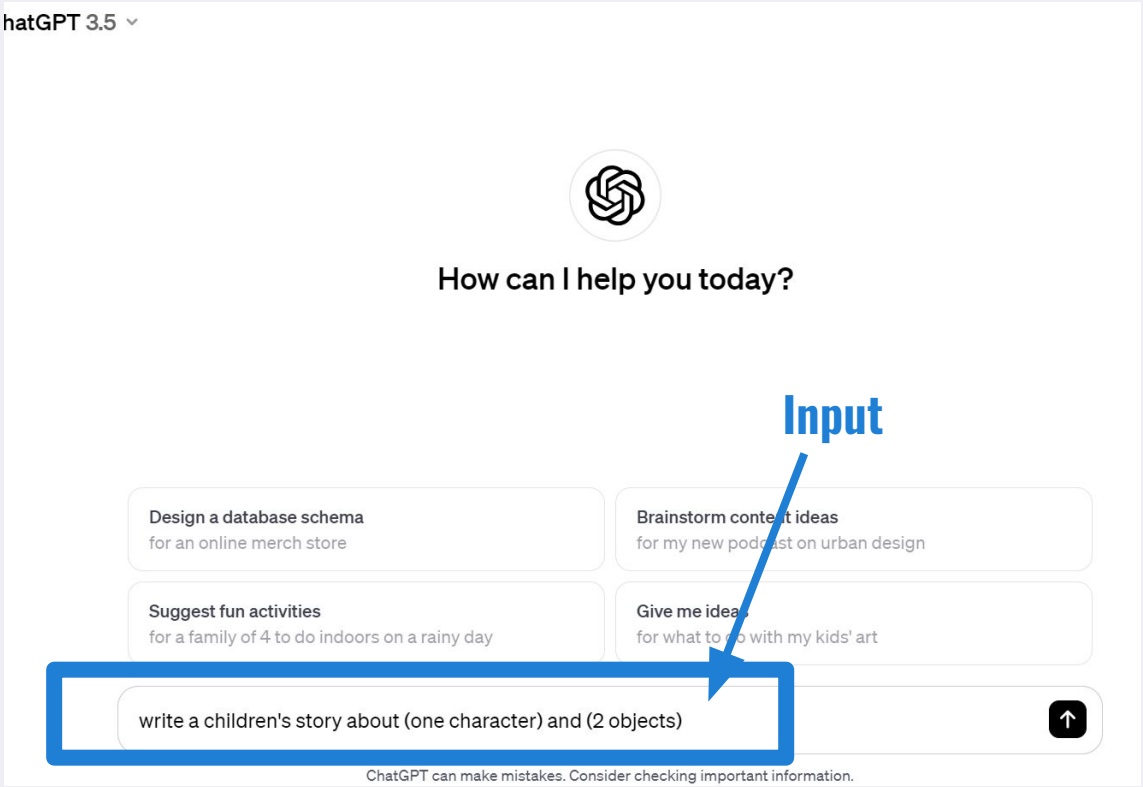

HI!

How do we get a computer to automatically generate text?



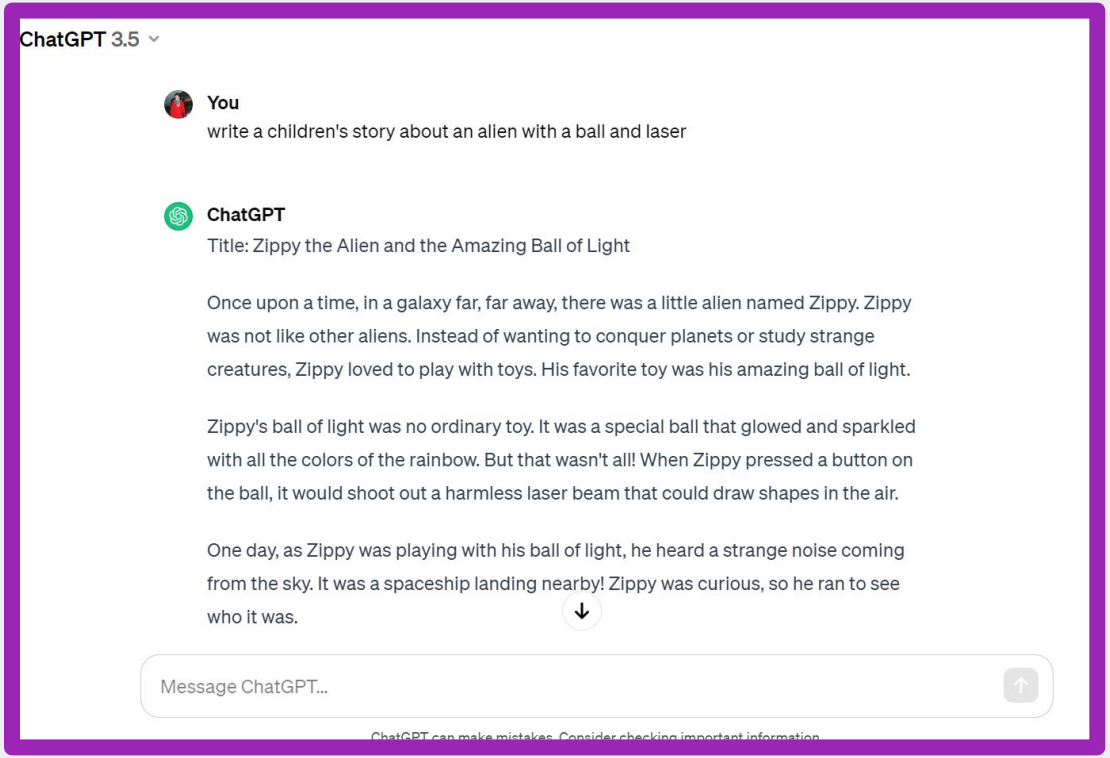
We still need some sort of data to train our model!!

Open Chat GPT



What do you think your trained “AGENT” will do with the input?

Output is a story!



Now you try.

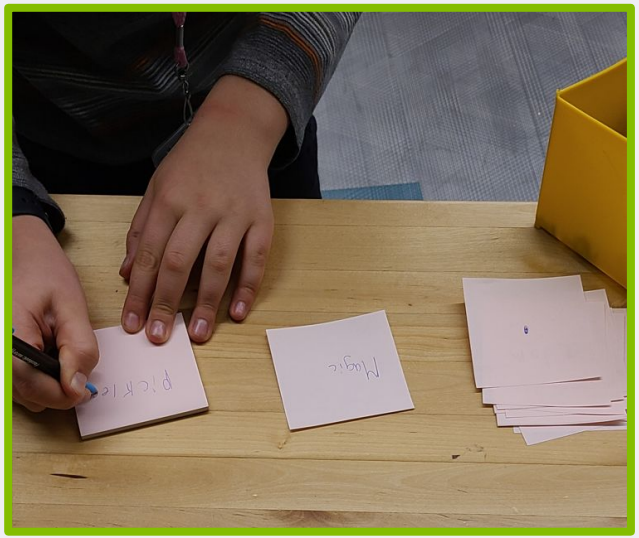
(Then we can talk about training data.)

Today we will focus on the **text generation** task of writing a children's story

Text Generation



Sticky Notes Unplugged



- On your turn, move to the table and write the next word that seems logical
- You will only be able to see the last two words
- During the downtime please finish your “Finish the sentence” sheet

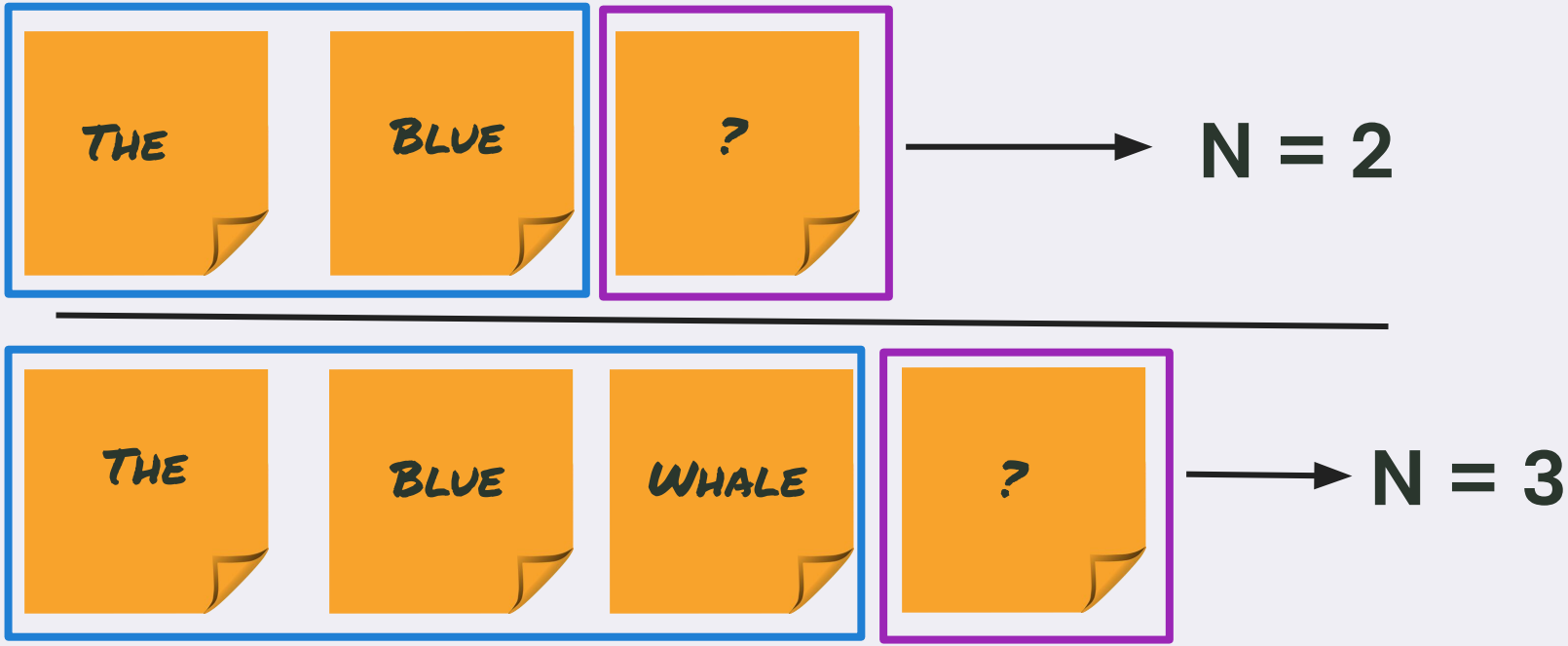
Discussion

- Why did you choose the word that you did?
- Did the final story make sense?
- What would help it make more sense?
- What “data set” did we have?



Ngrams

Ngrams are used in applications like language models, spelling corrections, semantic corrections and more. They are a set of numbers or symbols occurring in an order.



Training with Ngrams?

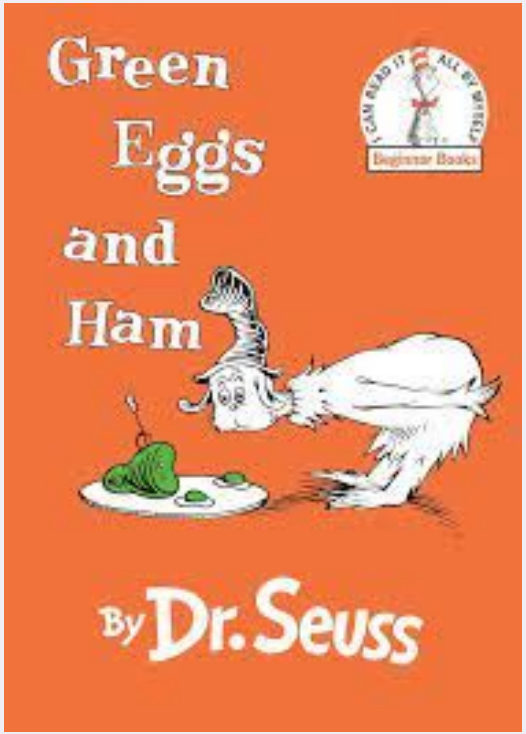
- A sailor went to _____.
- _____ went over the mountain.
- This little _____ of mine.



Sometimes we see sets of words together so often that we are “trained” as to what word comes next.

Task: Use the Green Eggs and Ham dataset to generate a new story.

Instead of all of the words and sentences – we are only going to use Green Eggs and Ham as our data set. A dataset is a collection of data taken from a single source or intended for a single project



We are going to TRAIN our model.

I am Sam
Sam I am

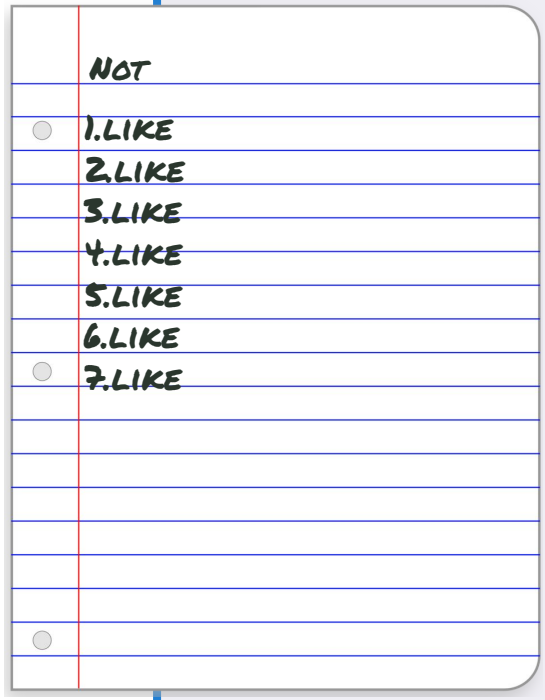
That Sam-I-am!
That Sam-I-am!
I do not like that Sam-I-am!

Do you like
green eggs and ham?
I do not like them, Sam-I-am.
I do not like
green eggs and ham.

Would you like them
here or there?

I would not like them
here or there.
I would not like them anywhere.

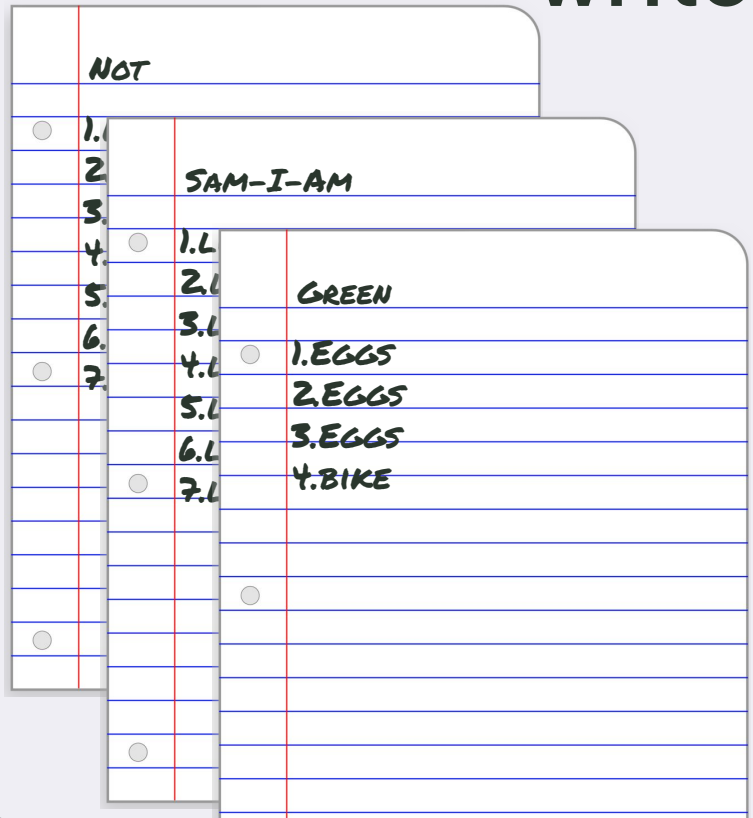
I do not like
green eggs and ham.
I do not like them, Sam-I-am.



Instructions:

- You will be given a word
- You will search that word in the Green Eggs and Ham Text using the word search tool
- You will write down:
  - How many times does that word exist
  - Write each word that comes after that word

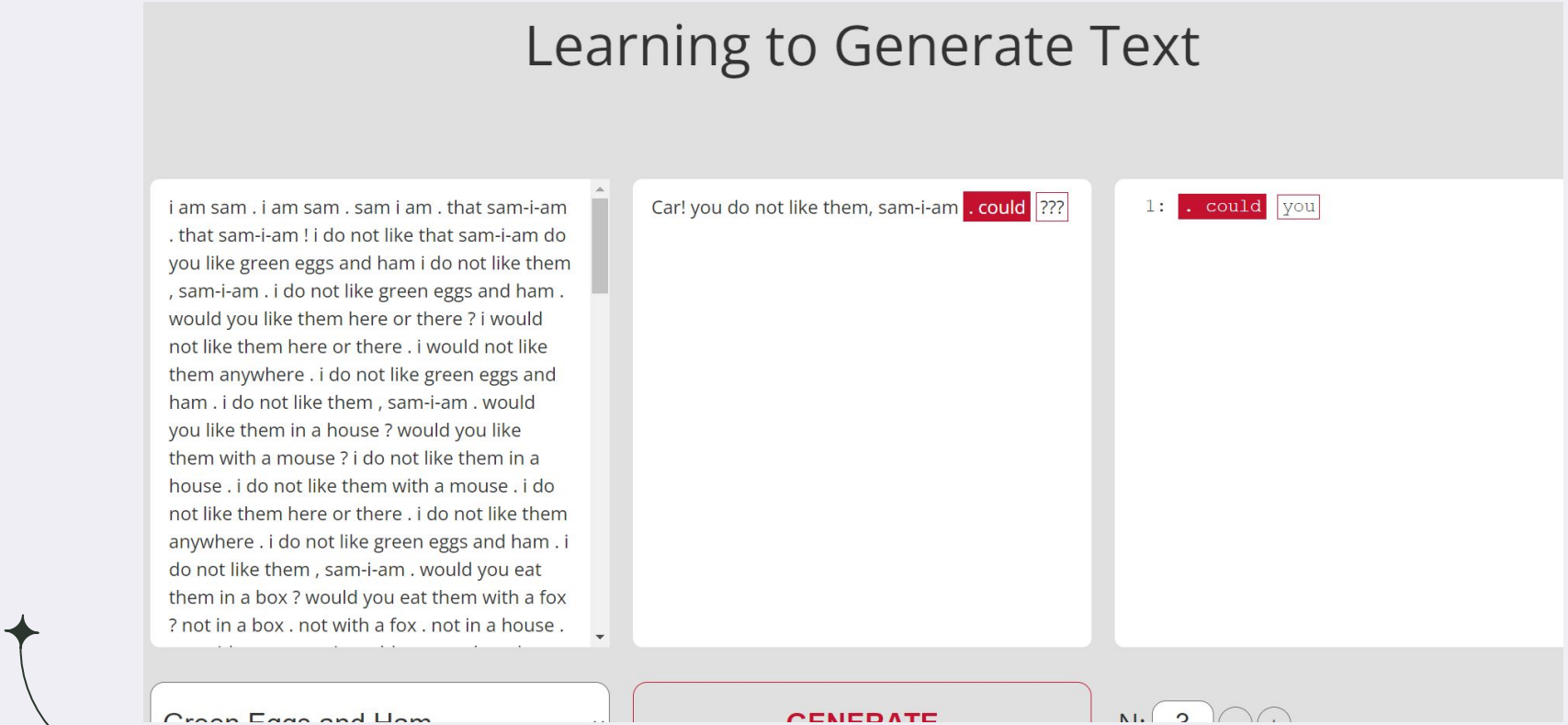
We will use the data you collect to write a story.



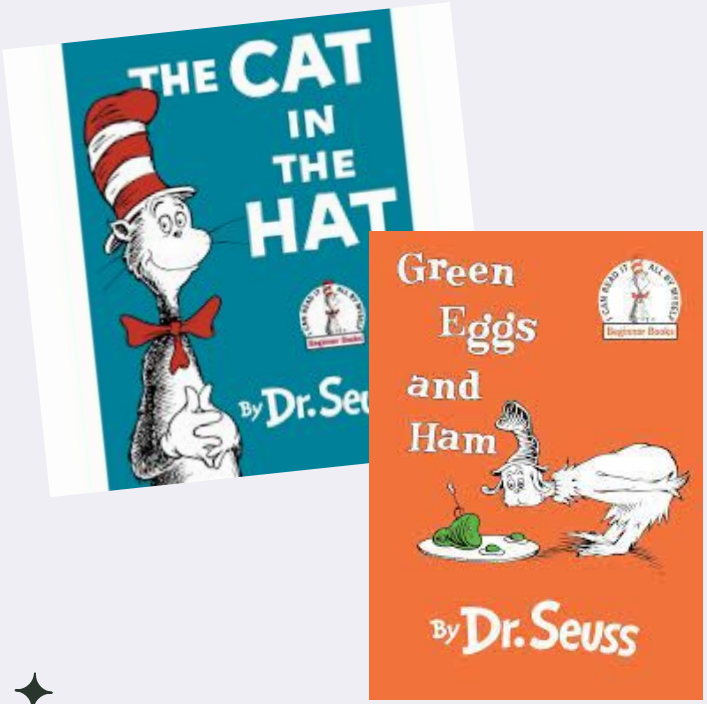
AND I WILL NOT, WILL NOT EAT GREEN EGGS AND HAM..... ?



Let’s have the AI do it instead.

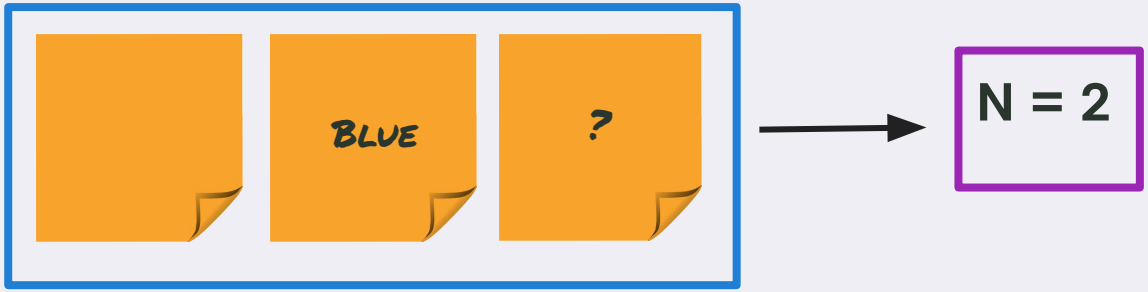


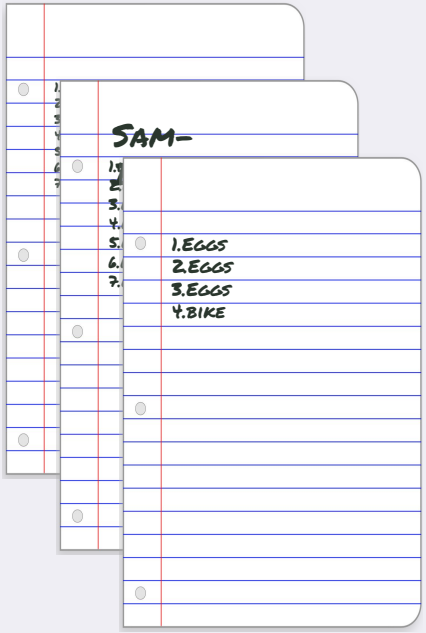
Discussion



- What was the hardest part about data collection?
- Was the computer able to make a good story?
- Was it a very unique story?
- What if we gave the computer more books to pull words from? What are the pros and cons?

Review





- Ngrams is a way for computers to group data
- We needs lots of data to create sensible text
- Data takes a long time to go through for humans