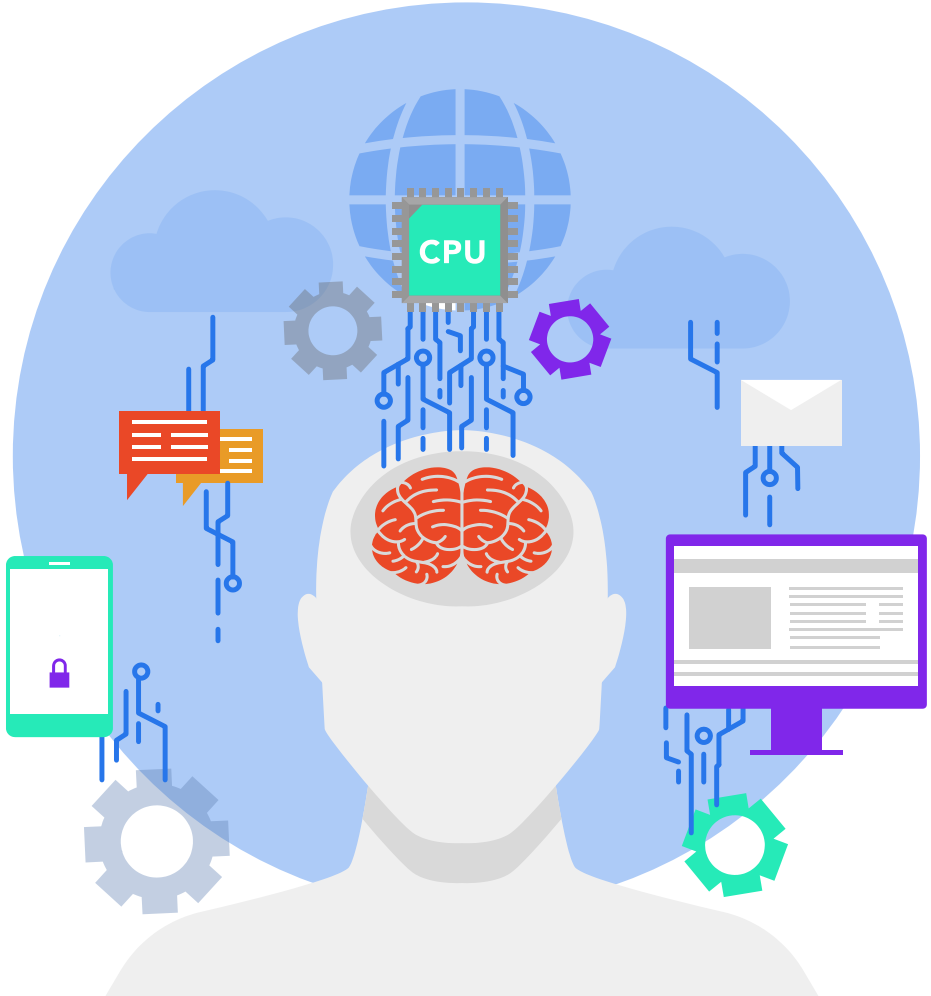


Everyday AI:

Building Better Things Through AI Literacy for Everyone

AI Materials Discovery Workshop

June 22nd, 2025

Workshop AGENDA

I. Introduction

II. Demystifying AI Fundamentals

III. Hands-On Activity: Intro to Supervised ML

IV. What could possibly go wrong?

V. More Hands-On AI activities!!

VI. AI Ethics and how to talk about them with our youth

VII. Activities Continued

Access Today's Slide Deck

https://shorturl.at/ybTEC

Workshop Presenters

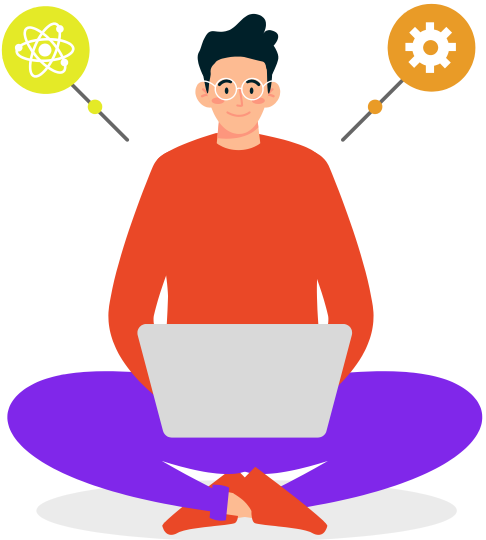
Name
Title

Kate Moore
Research Scientist

Name
Title

Name
Title

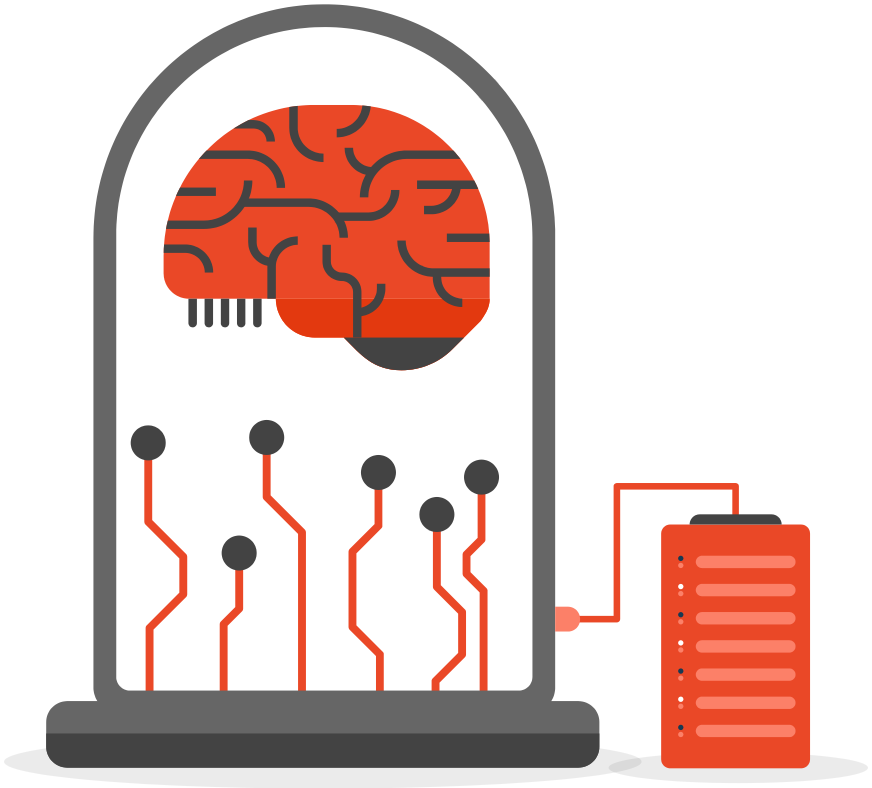
Who is in the room?



Wifi: **AMNH Education**

PW: **AnTRAILTeKTaV1869**

What is artificial intelligence (AI)?



Workshop Deliverables:

- A clear understanding of how AI works—beyond just using AI tools
- Four ready-made classroom activities to introduce AI concepts in Science, Math, or English
- **A Google Folder** with 45-60 minute lessons and materials to implement right away
- Confidence to lead engaging discussions on AI's role in society and its ethical implications

Learning Objectives:

- Break down AI fundamentals in a way that students can easily grasp.
- Teach AI concepts through structured, interactive activities in Science, Math, or English.
- Think about how to talk with our students about AI ethics.

Everyday-AI.org

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What is Artificial Intelligence?

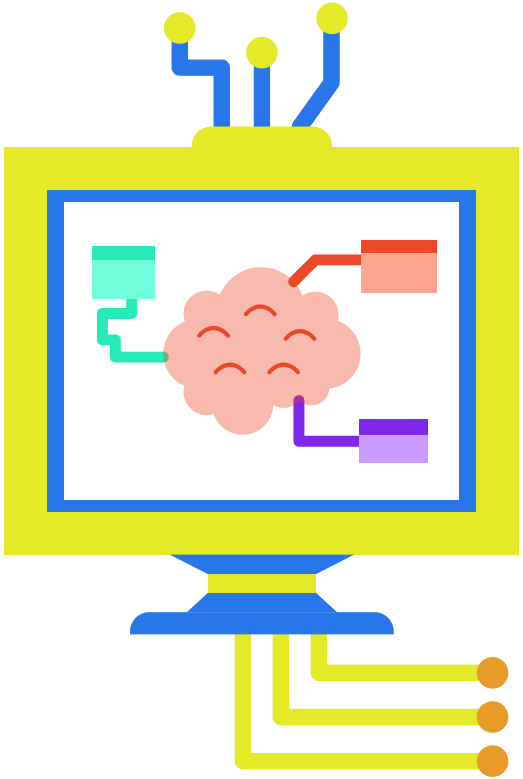
Making computers perform “intelligent” tasks such as
recognizing things,
understanding them, and
making decisions about them.

What is Artificial Intelligence?

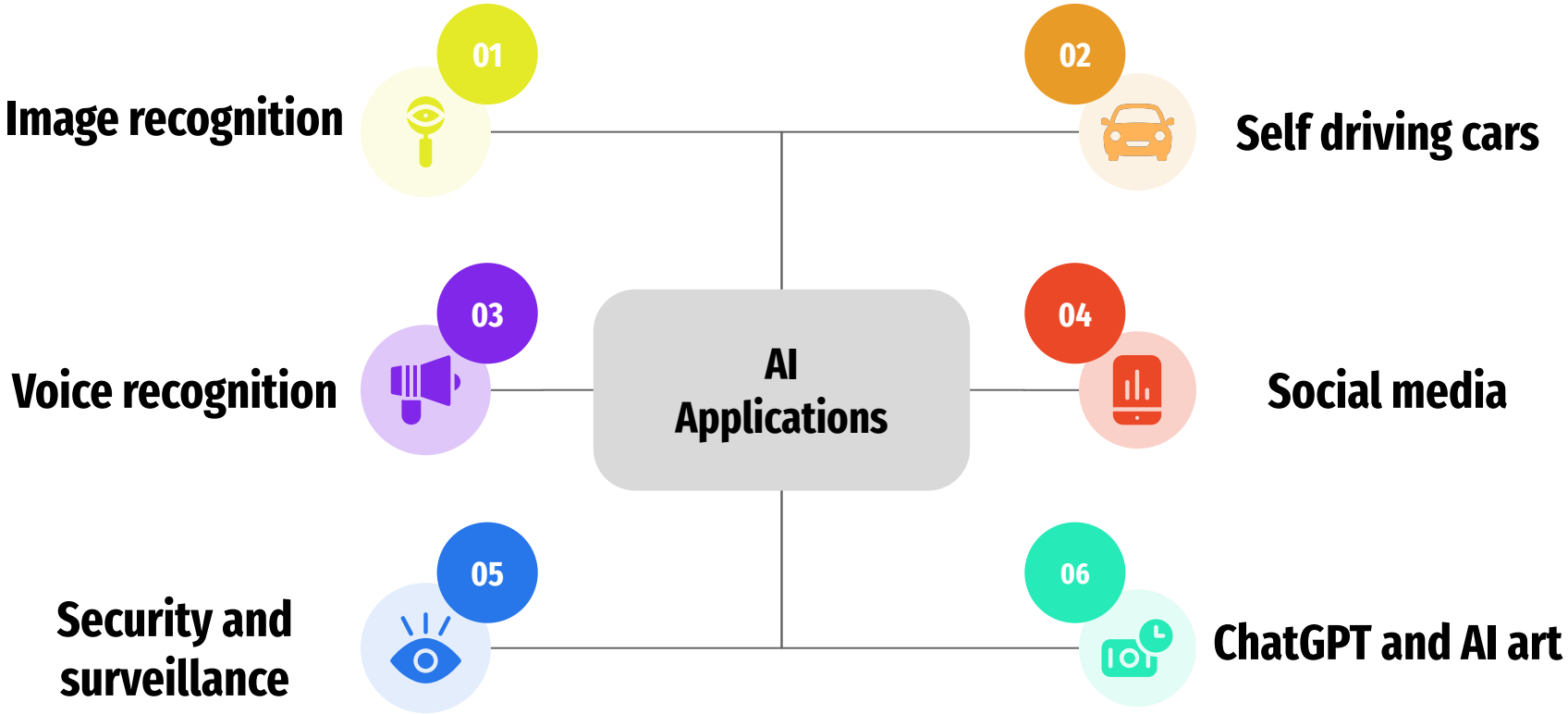
When machines simulate human intelligence

Machine learning algorithms take in data and create a model which can make predictions

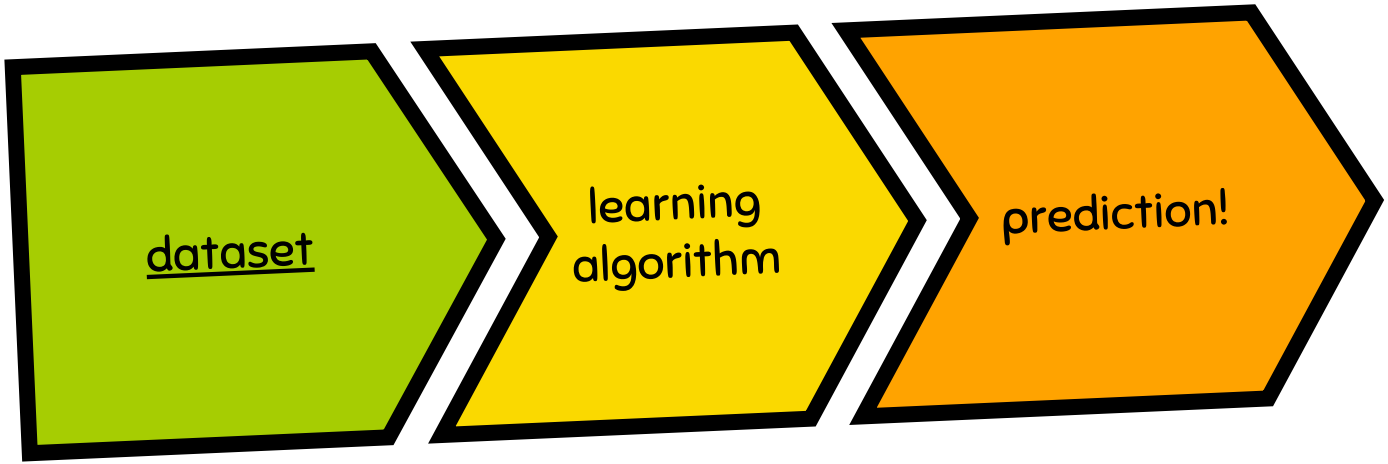
Often, these algorithms can learn from their mistakes and generate new, better models



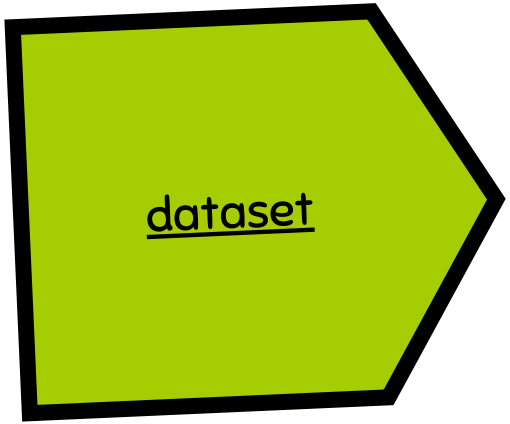
AI in everyday life



PARTS OF MACHINE LEARNING



PARTS OF MACHINE LEARNING



What is a

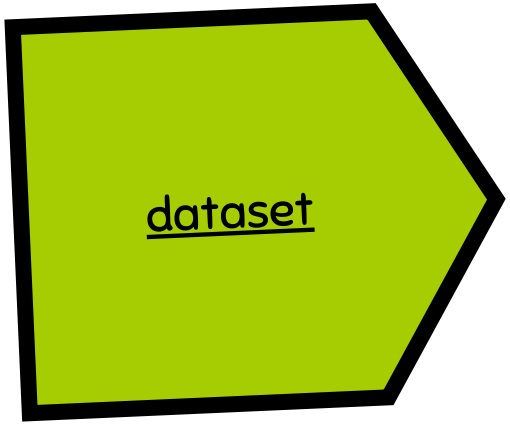
"DATASET"?

DATASETS

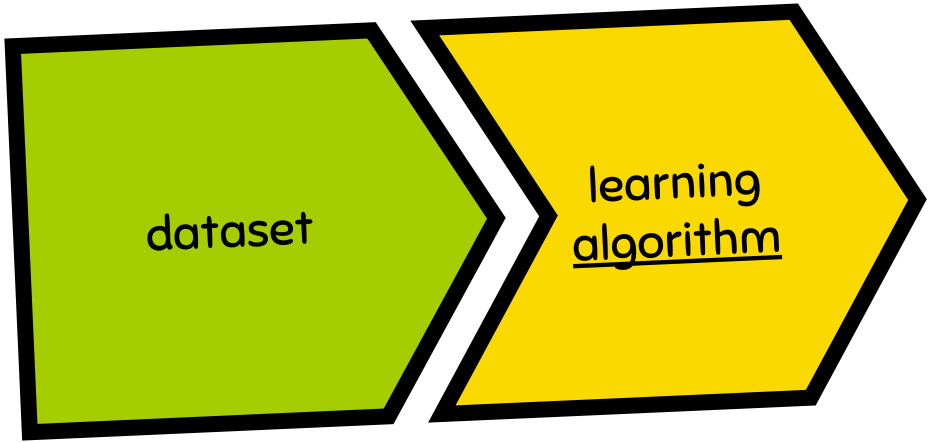
A dataset is a collection of curated data

- Images
- Measurements (time, views, inches, etc)
- Text
- Video recordings!

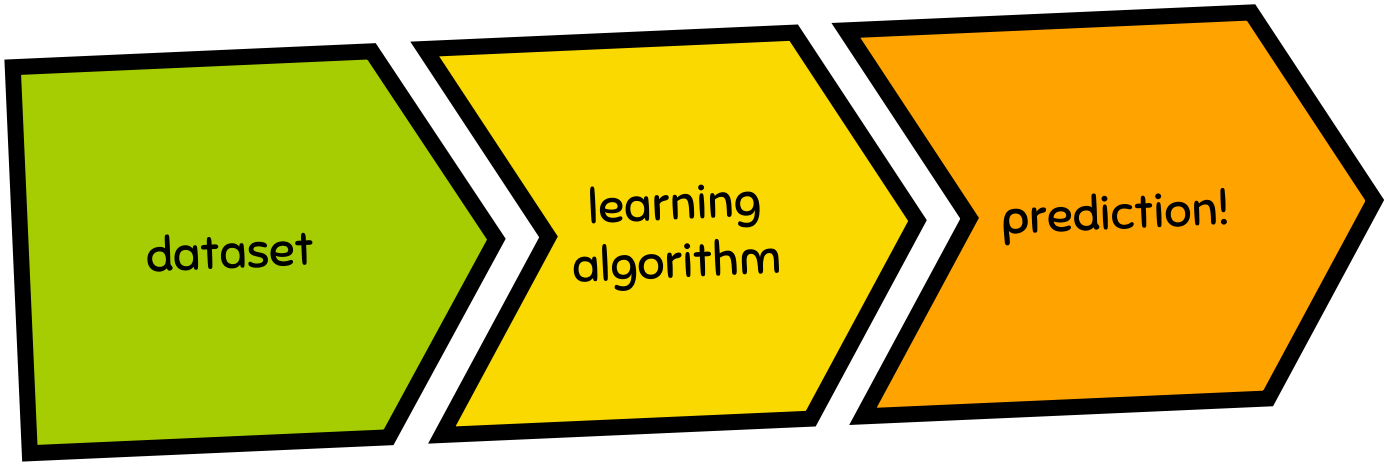
PARTS OF MACHINE LEARNING



PARTS OF MACHINE LEARNING



ALGORITHM



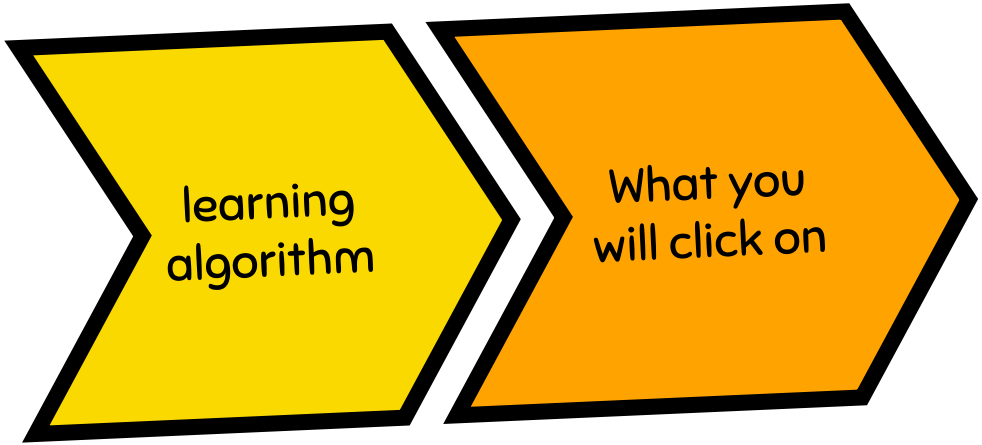
LET'S TRY SOME EXAMPLES

INSTAGRAM ADVERTISEMENT

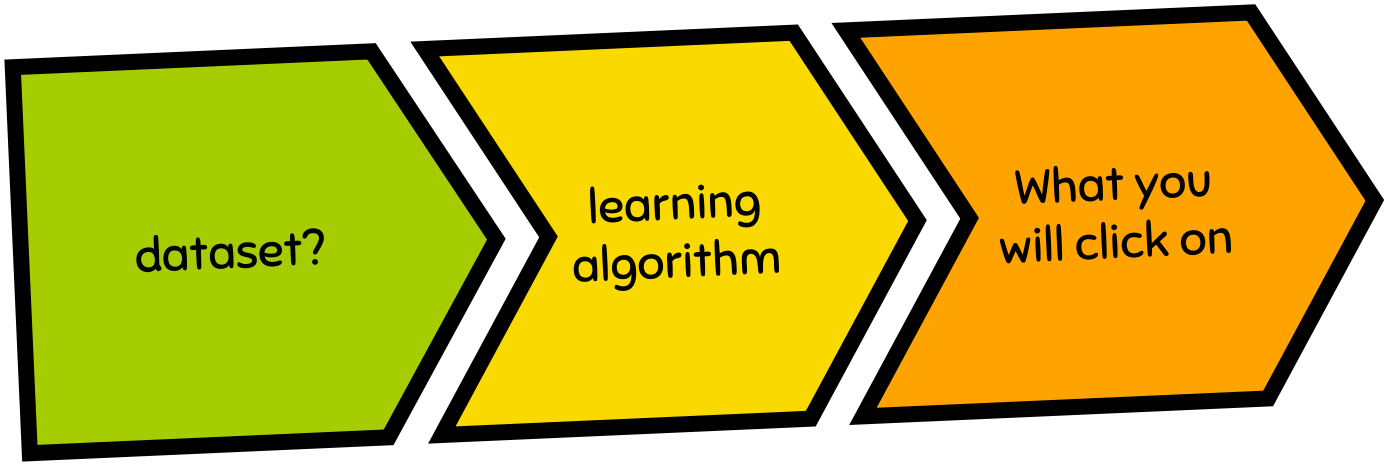
INSTAGRAM ADVERTISEMENT

What you will click on

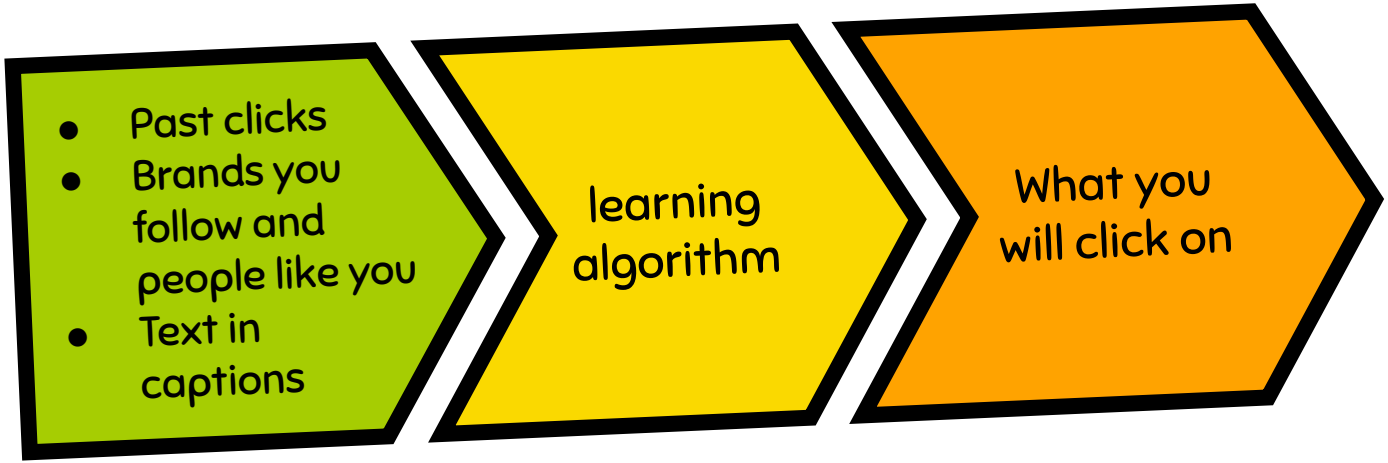
INSTAGRAM ADVERTISEMENT



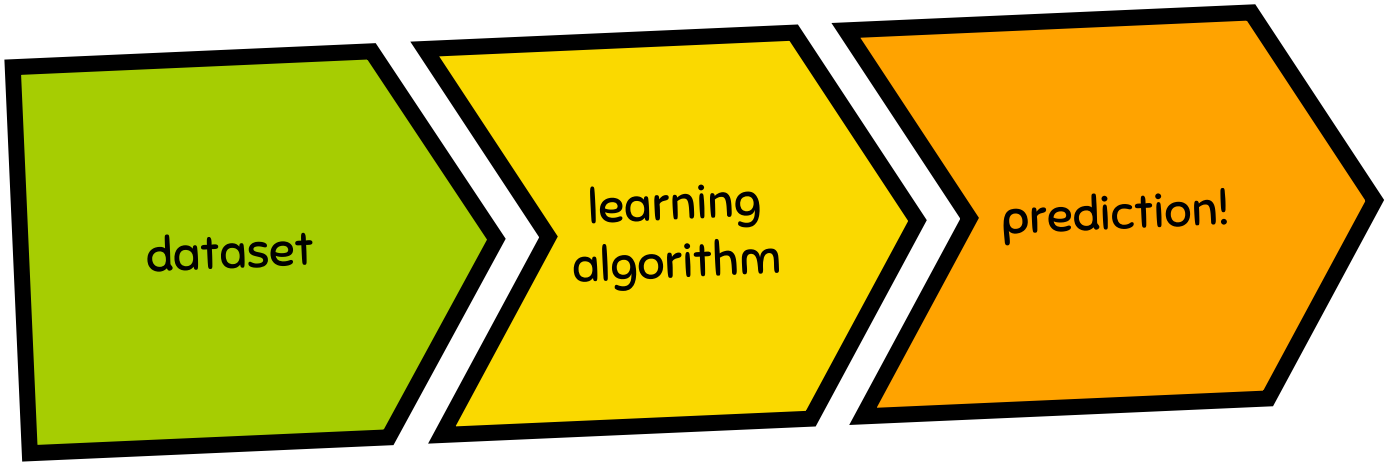
INSTAGRAM ADVERTISEMENT



INSTAGRAM ADVERTISEMENT

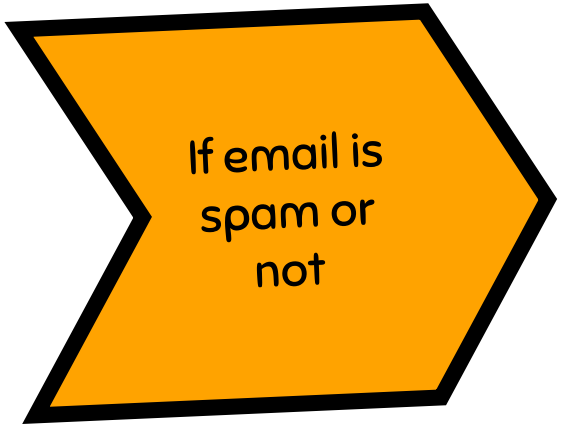


Email spam filter

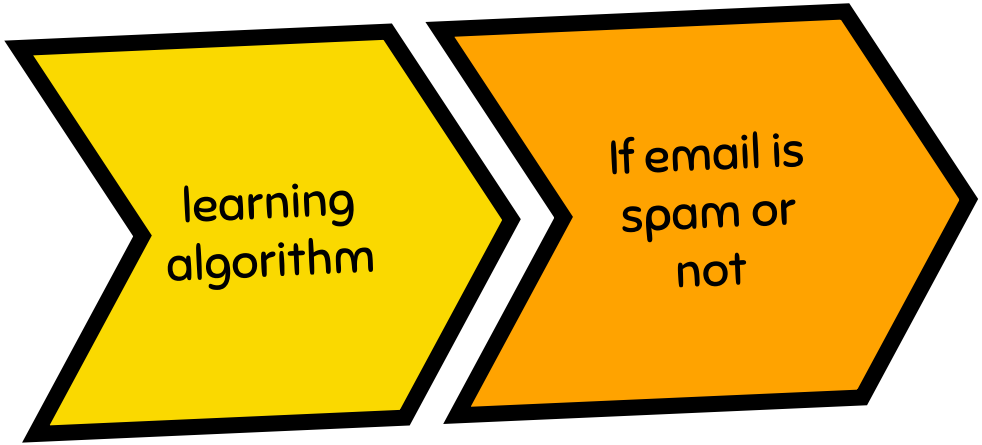


Email Spam Filter

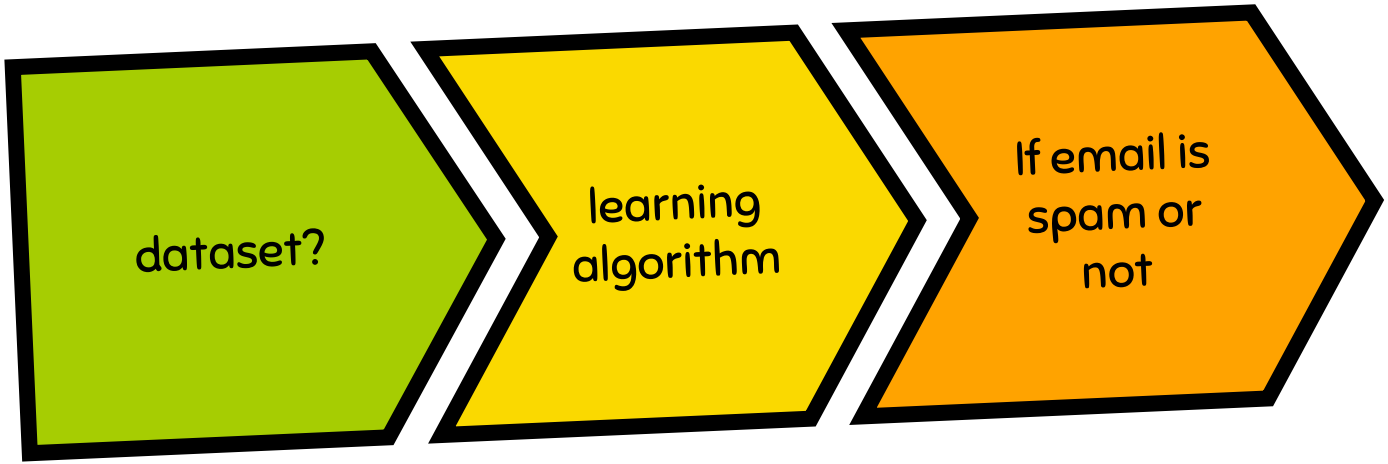
Email Spam Filter



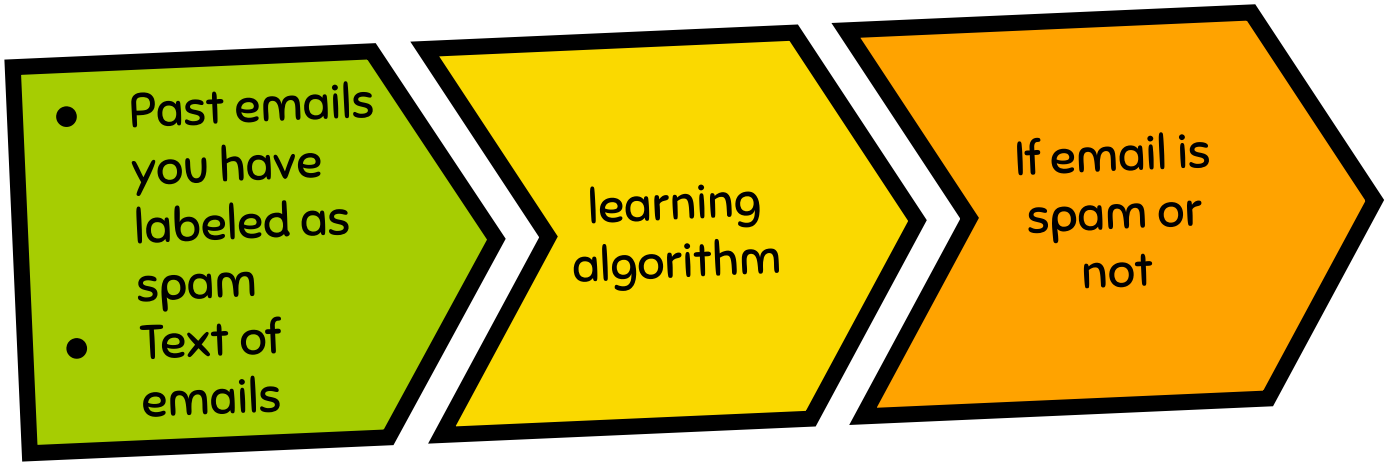
Email spam filter



Email spam filter



Email spam filter



AI OR NOT??


06
AGENT
AGENT


Google

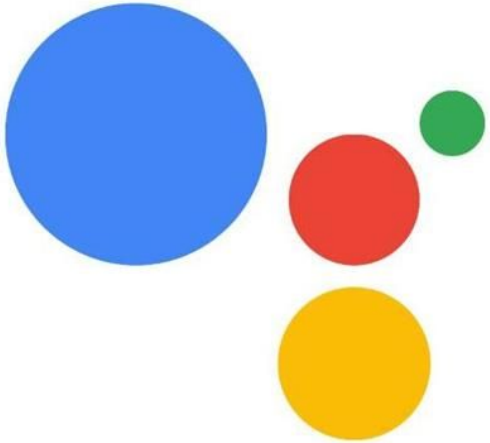
Dataset:

Prediction:

Dataset: routes that people have taken in the past

Prediction: how to get somewhere


EXIT
EXIT
OUT
AUTOMATIC
CAUTION
DOOR
OUT
AUTOMATIC
CAUTION
DOOR



Google Assistant

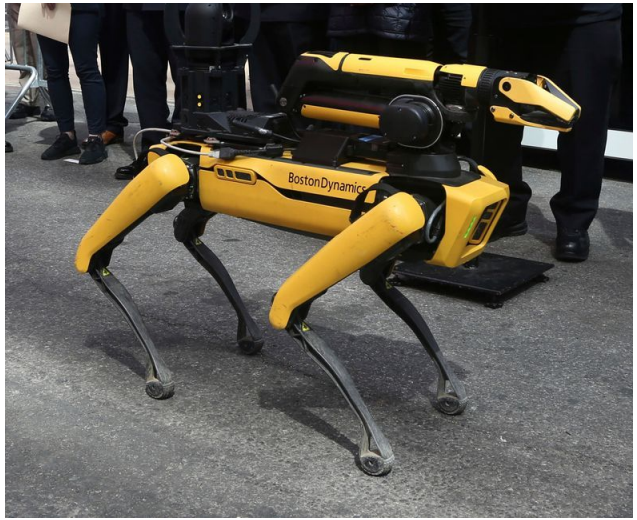
Dataset:

Prediction:

Dataset: human-annotated audio samples

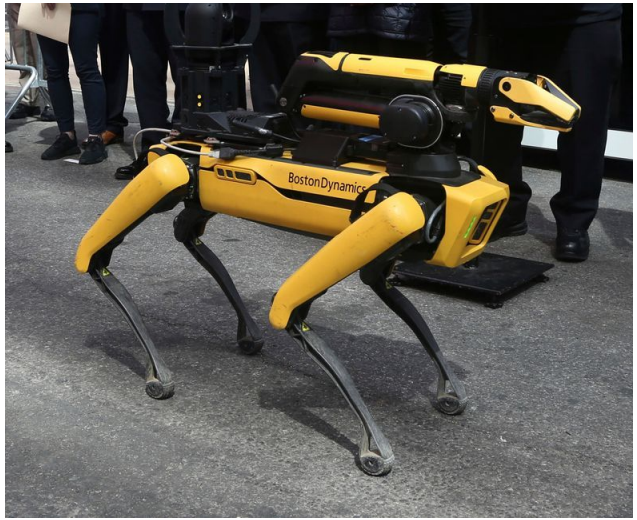
Prediction: what word to say next in an utterance


HEARFROMERIC.COM
BostonDynamics



Dataset: sensors

Prediction: position, data collection



Dataset:

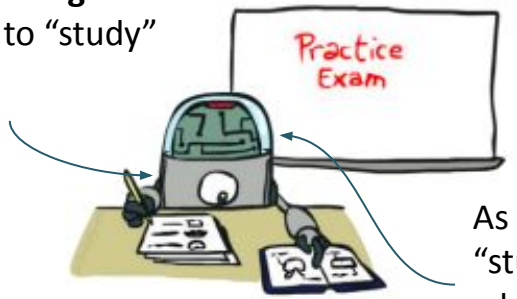
Prediction:

ANY QUESTIONS?

Let’s see how these three things come together…

Here's one way to think about it…

Computer program using a **learning algorithm** to "study" the **data**



Data with labels like an answer key

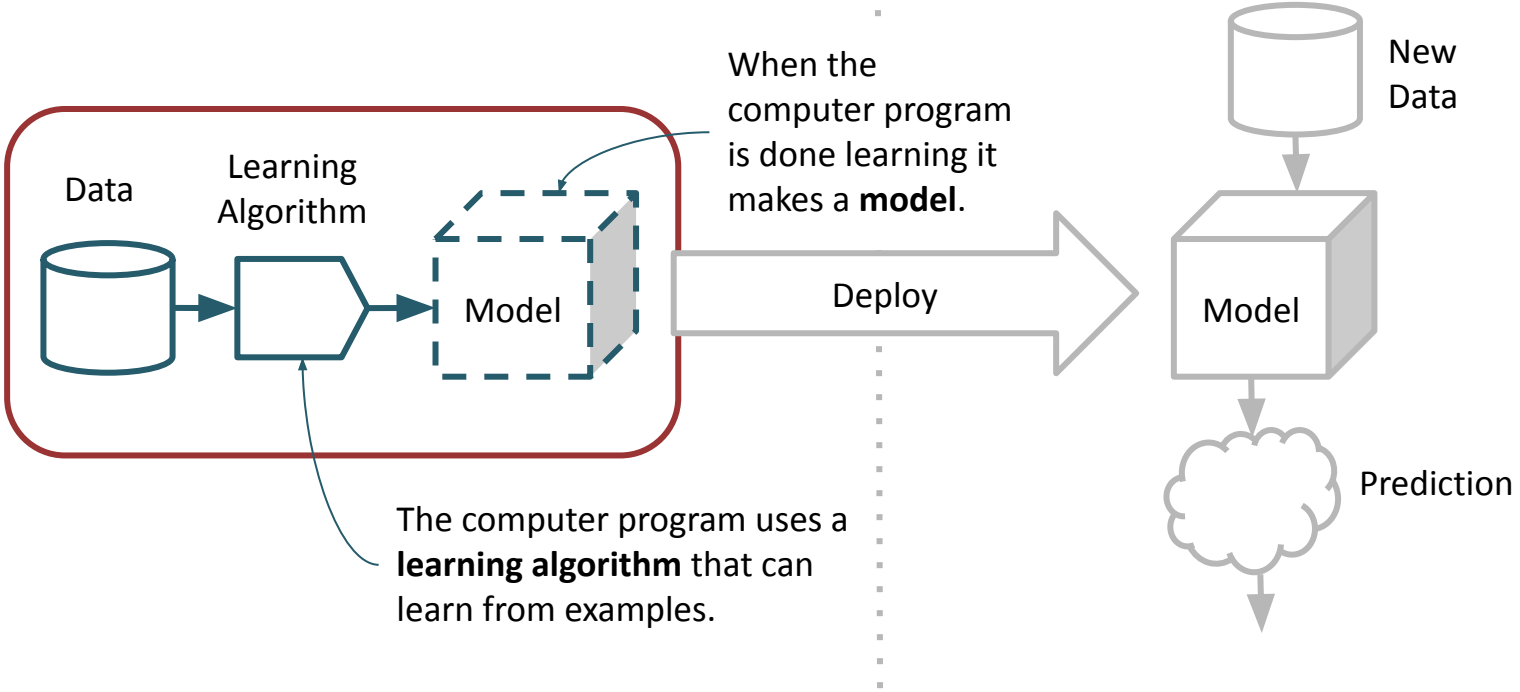
As the **learning algorithm** "studies" it makes a **model,** which is like a set of patterns that it has learned

Like graduation, the **model** can be released or **deployed** for use in the real-world.

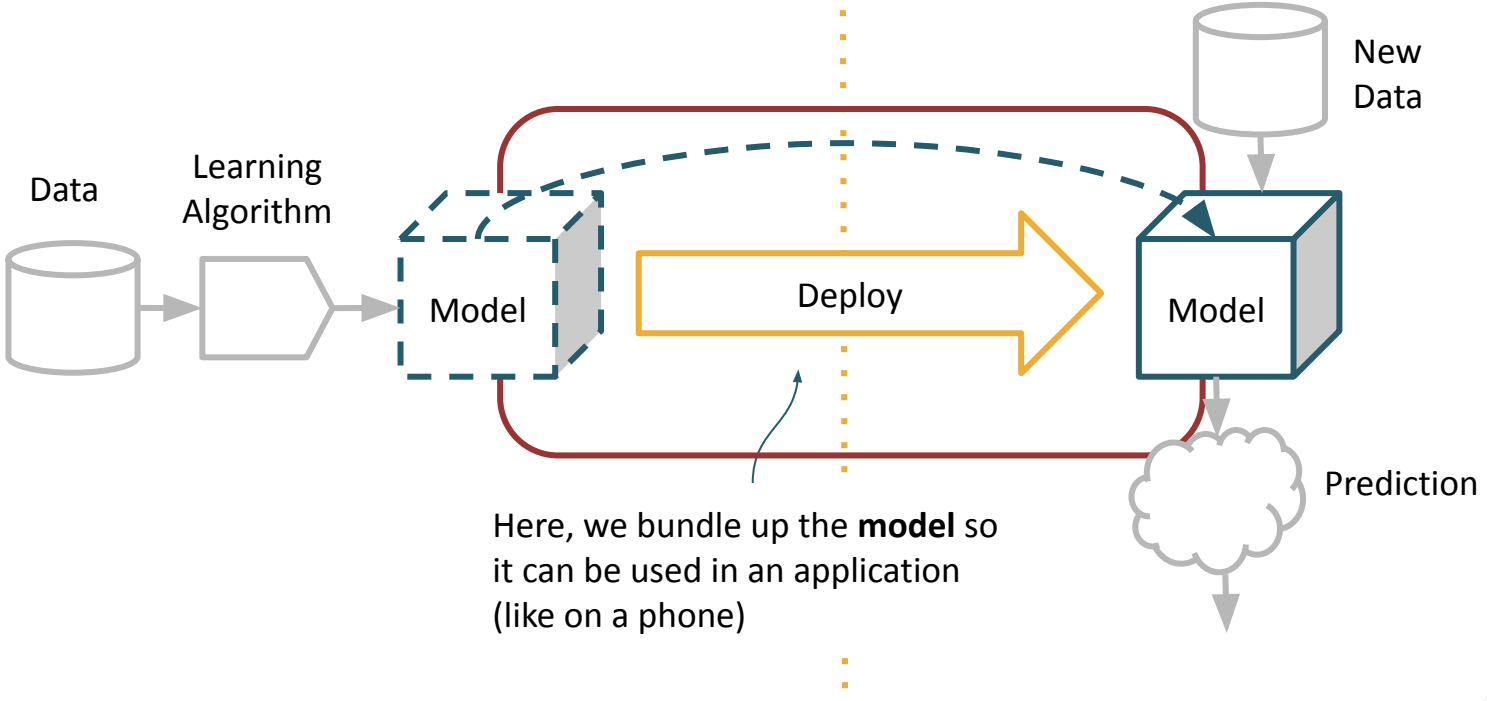
Image Source: UC Berkeley CS188 Intro to AI -- Course Materials, artwork by Ketrina Yim. Link: https://ai.berkeley.edu/home.html

Here's what's happening under the hood…

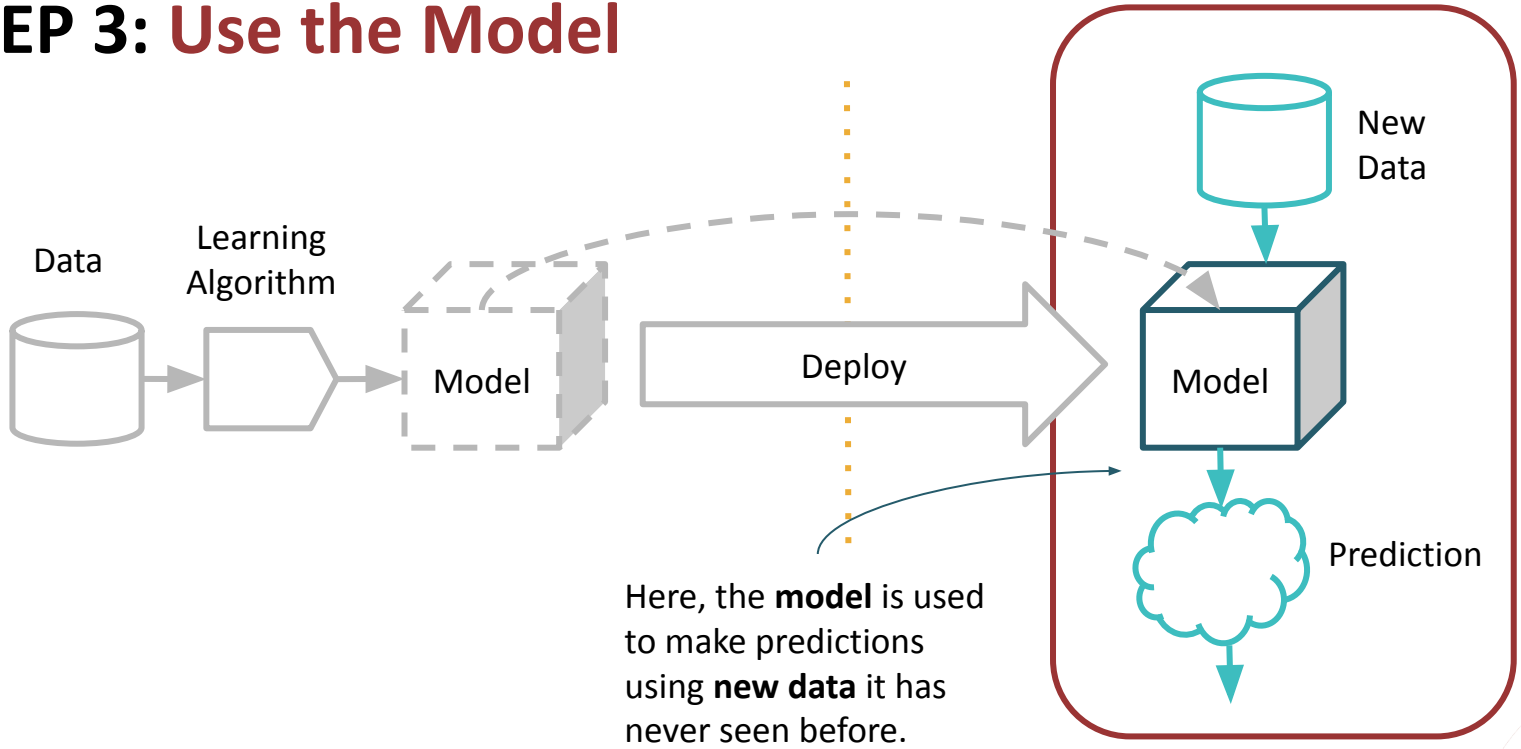
STEP 1: Training the Model

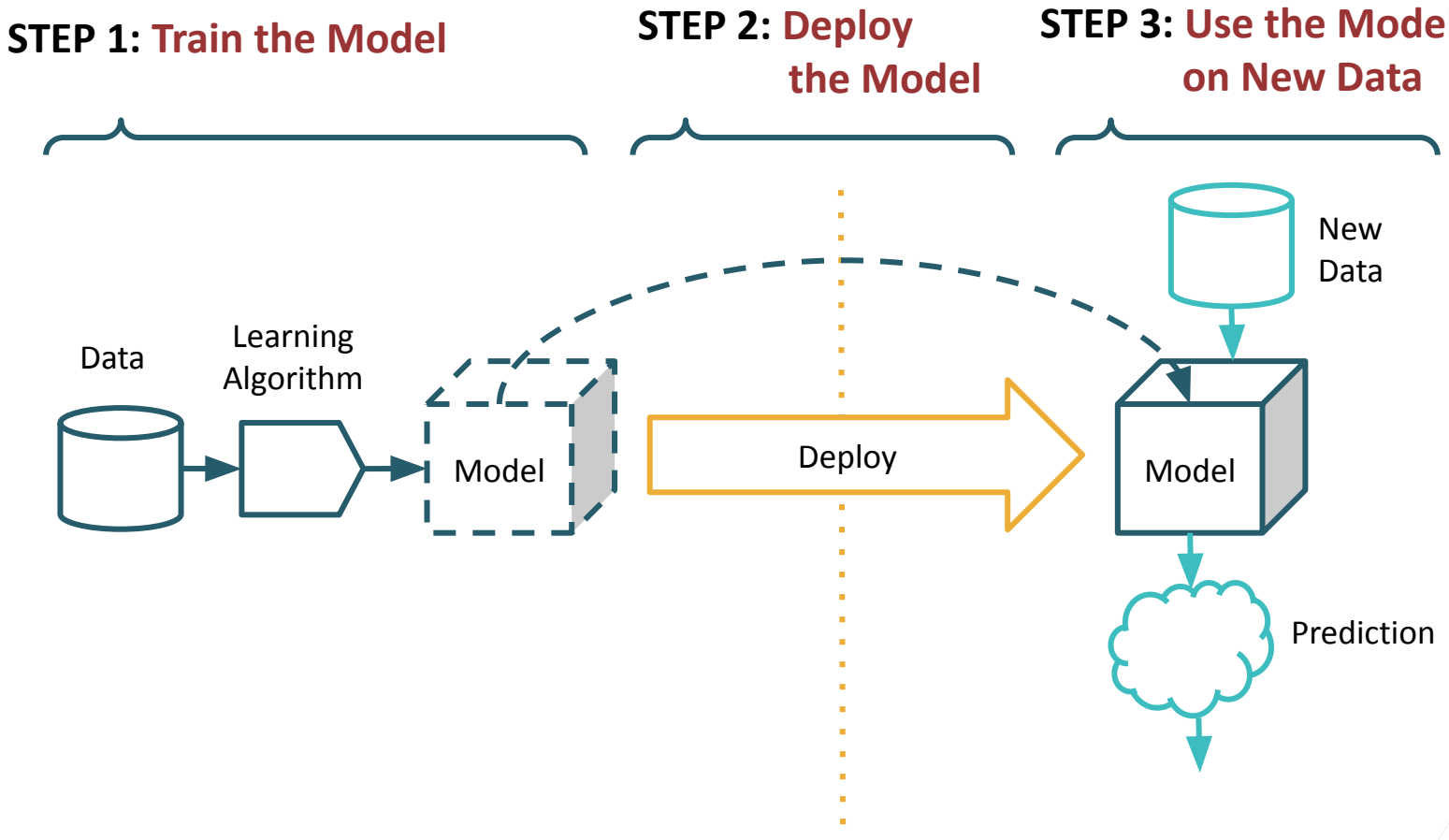


STEP 2: Deploying the Model



STEP 3: Use the Model




STEP 1: Train the Model
STEP 2: Deploy the Model
STEP 3: Use the Model on New Data
Data
Learning Algorithm
Model
Deploy
New Data
Model
Prediction

Key Takeaways…

- Data is any information.
- A learning algorithm is a type of computer program.
- A prediction is like a guess.
- A model is like rules learned from patterns in a set of data.
- Once a model is created, it can be deployed in application(s) to make predictions about new data.
- A model’s predictions are based on rules learned from patterns in the first data, not the new data.

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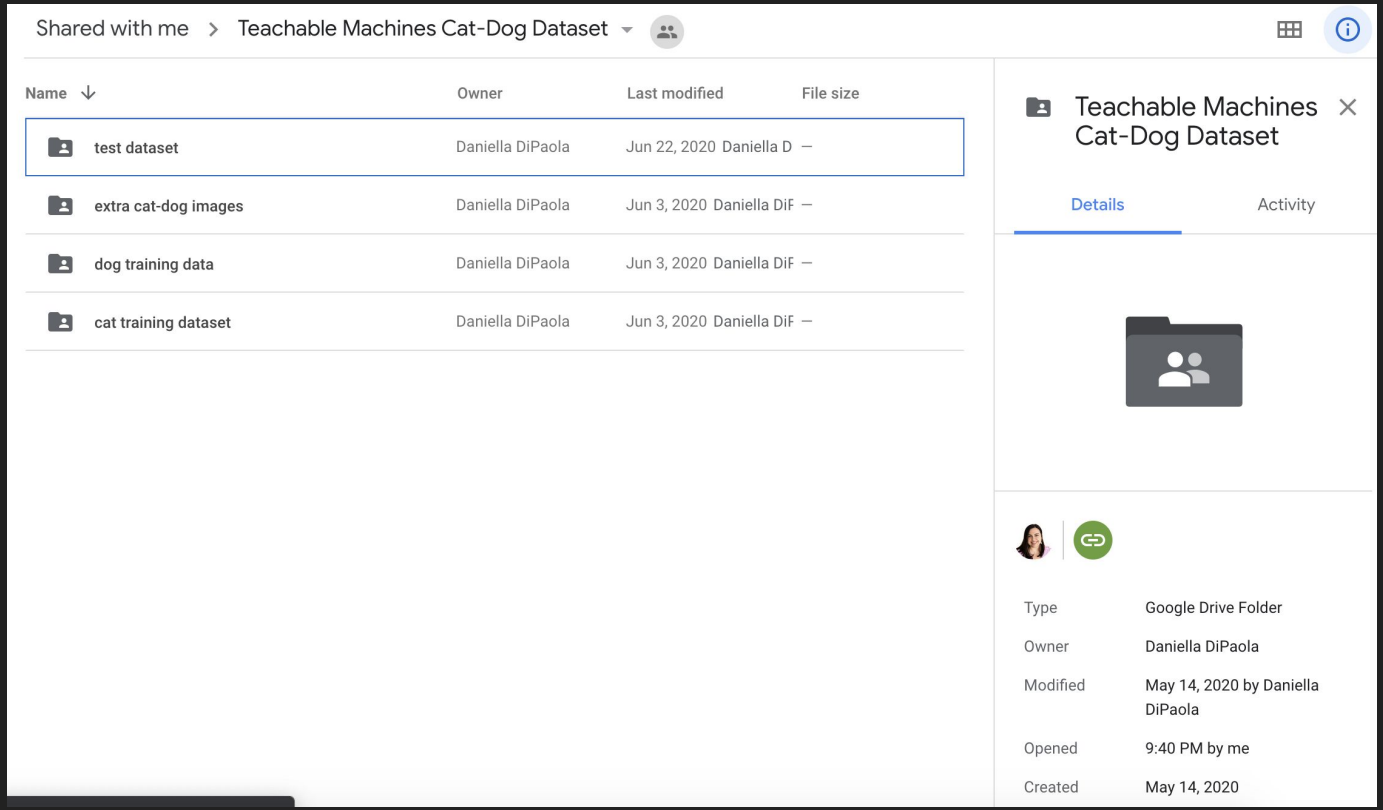
Intro to Supervised Learning

How to Upload Images for Testing and Training in Teachable Machines

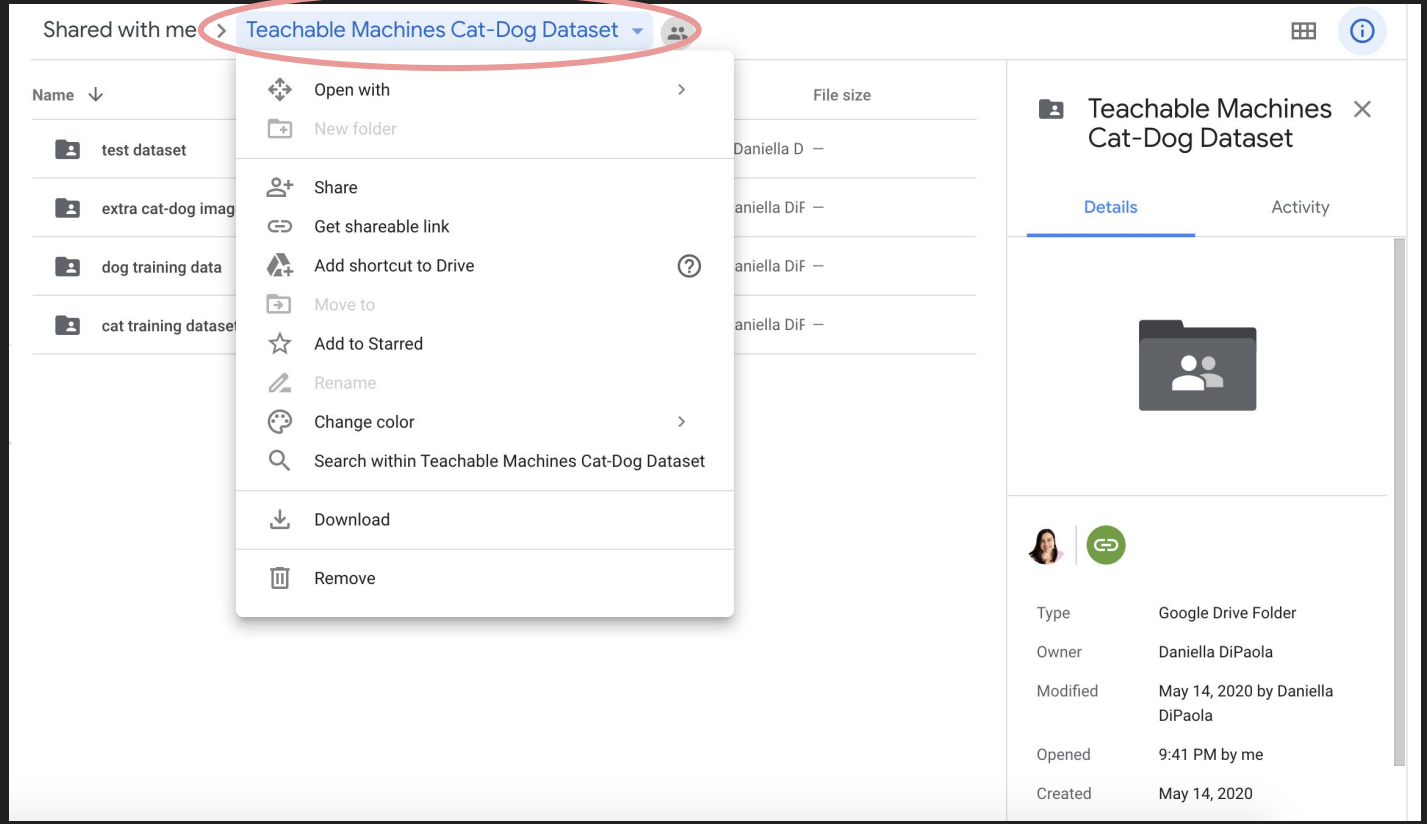
Uploading Data

Before we start, we're going to move the data you'll need to your Google Drive. Go to this link here and follow the steps in this slideshow.

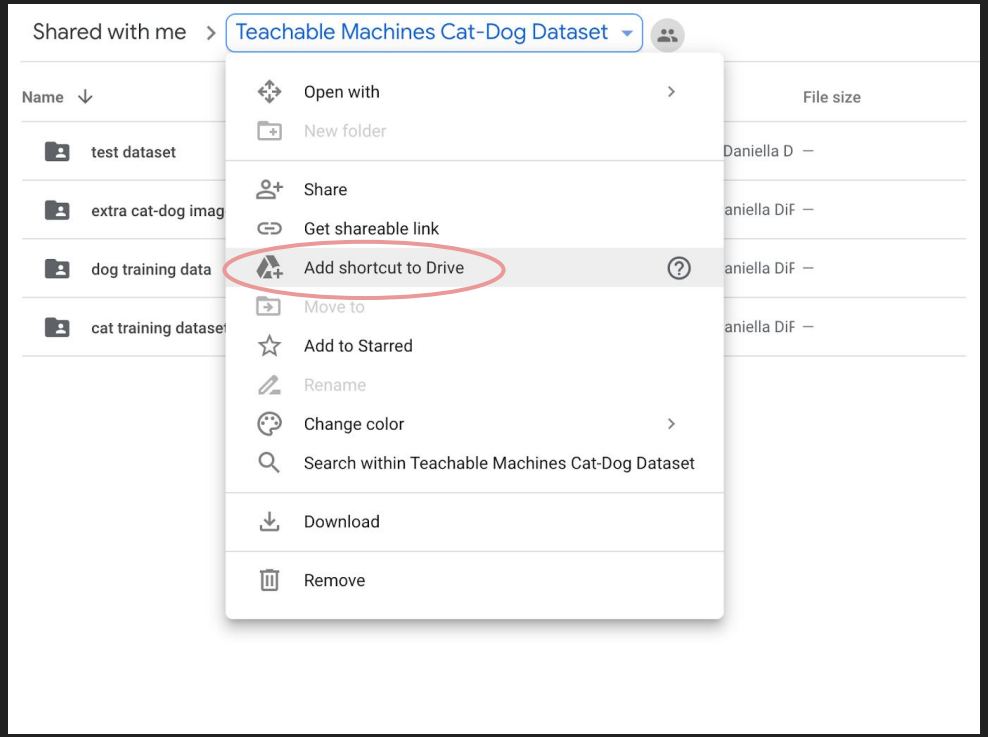
You should automatically be at a page like this:



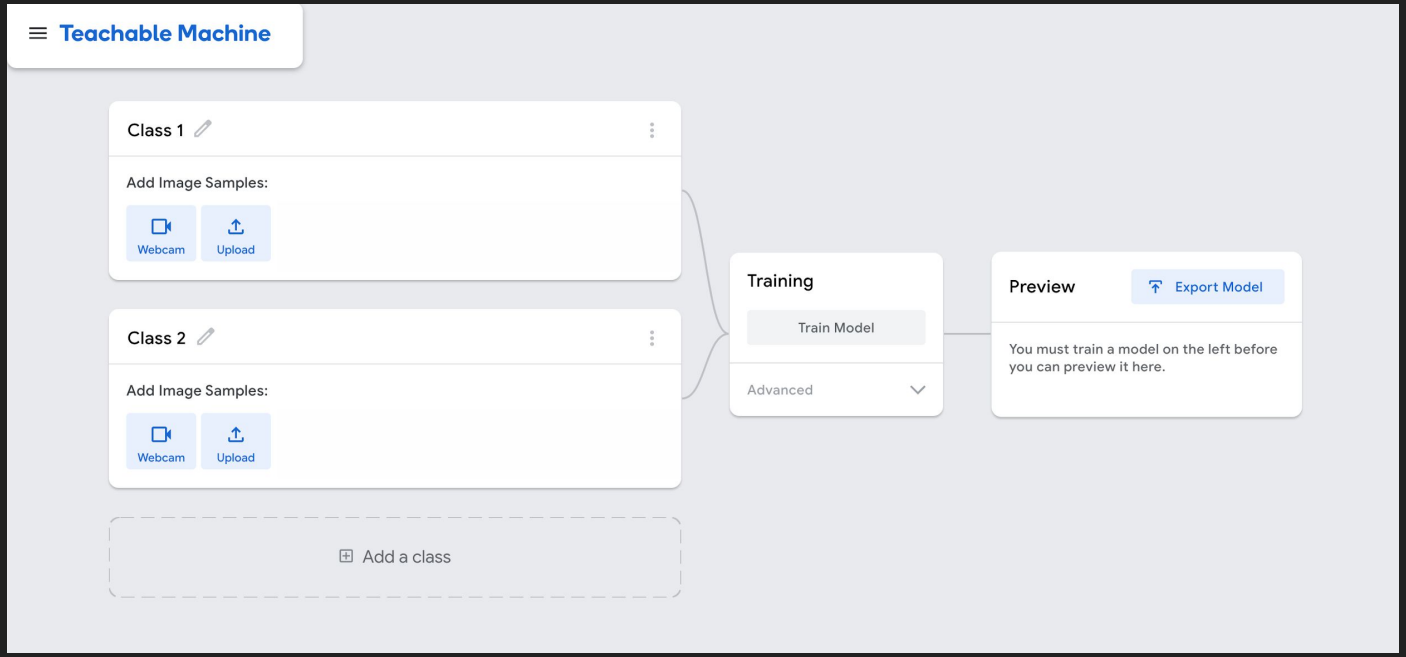
1. Right click on “Teachable Machines Cat-Dog Dataset”



2. Click on “Add shortcut to Drive”.



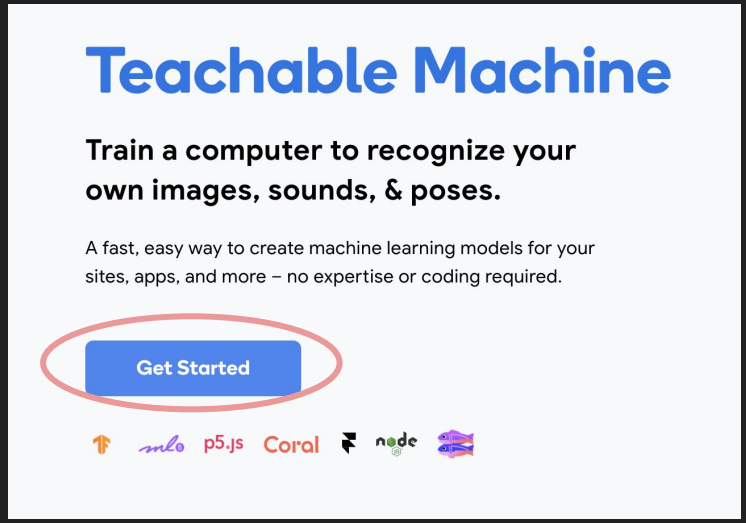
You should now be on a page that looks like this:

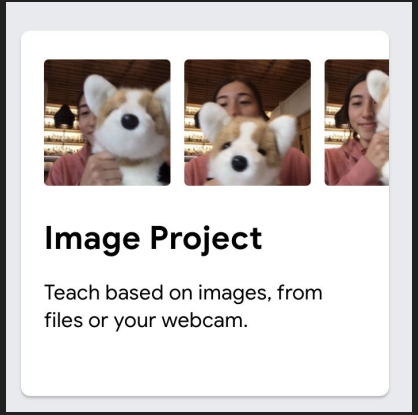


3. Navigate to https://teachablemachine.withgoogle.com/

4. Click on the blue “Get Started” button.

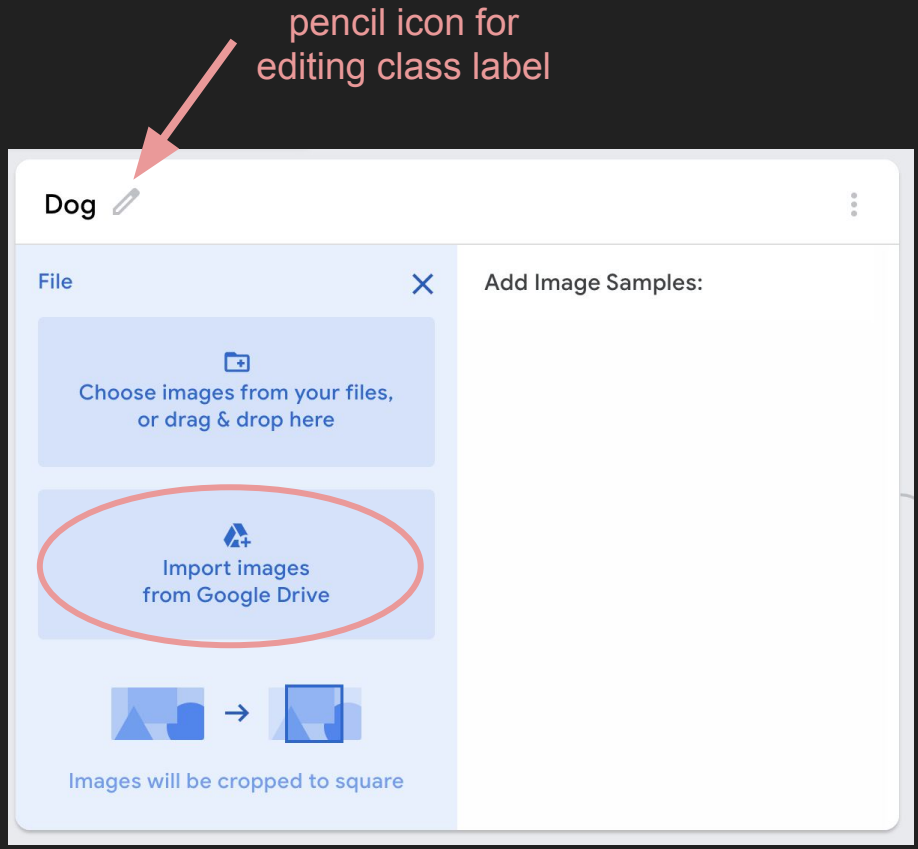
5. Click on “Image Project”



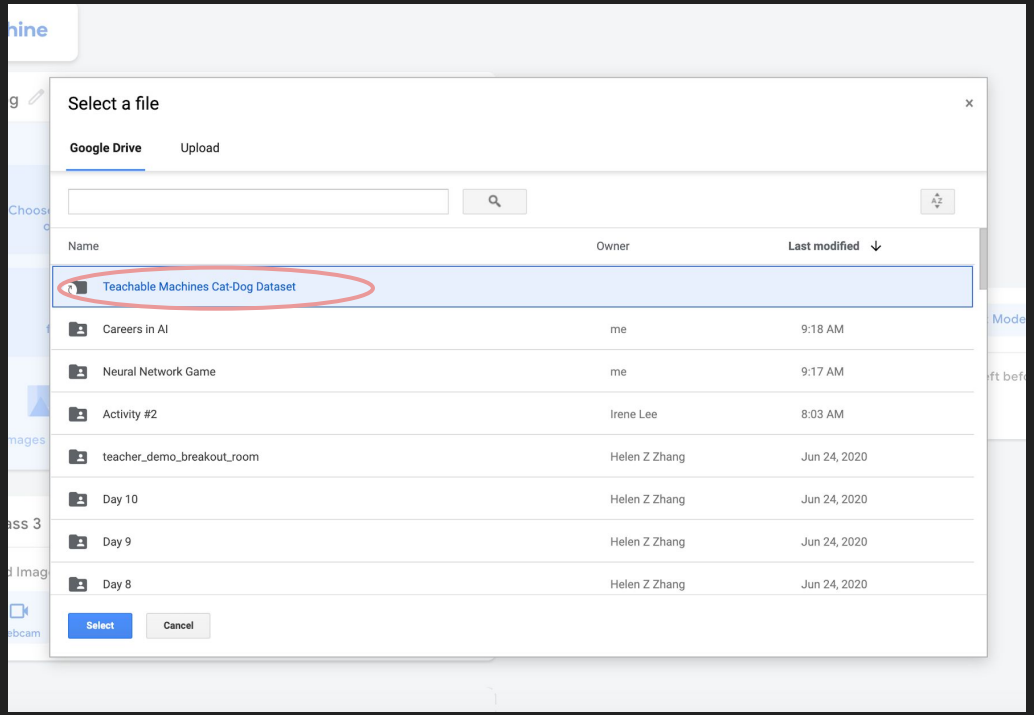


We'll begin with Class 1 and provide it with the data for dogs.

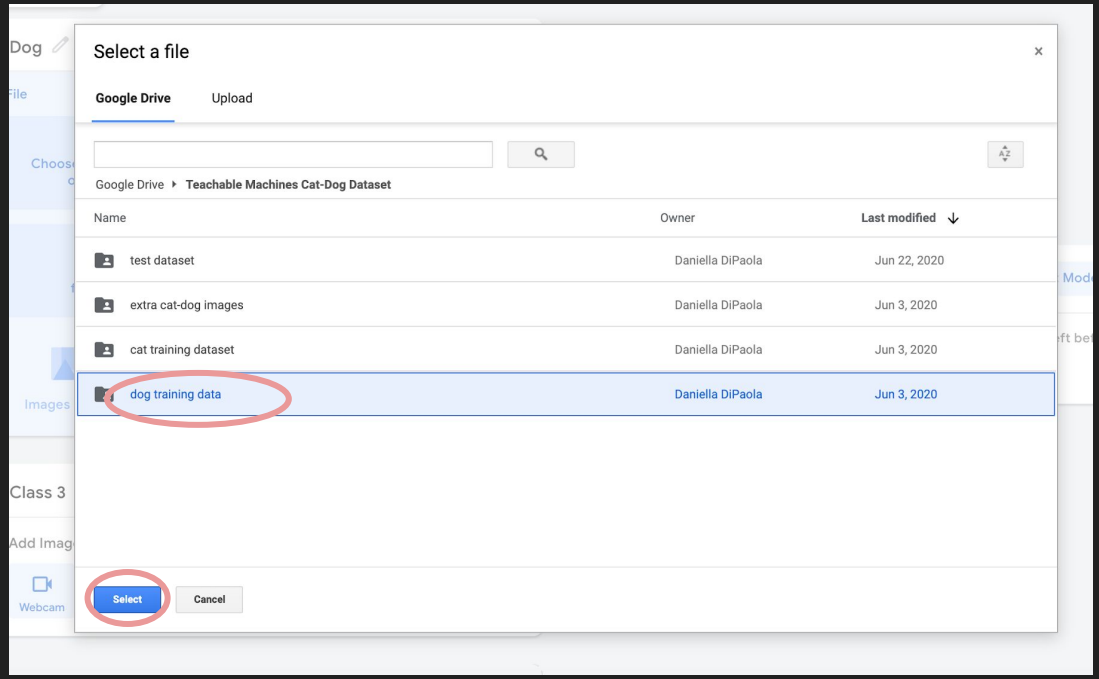
6. Edit this class' name to be "Dog" by clicking on the pencil icon
7. To upload images, click on the "Upload" button in the "Dog" class.
8. Next, click "Import images from Google Drive"



9. Double click into “Teachable Machines Cat-Dog Dataset”
    a. If it doesn’t appear at the top, search for it in the search bar.

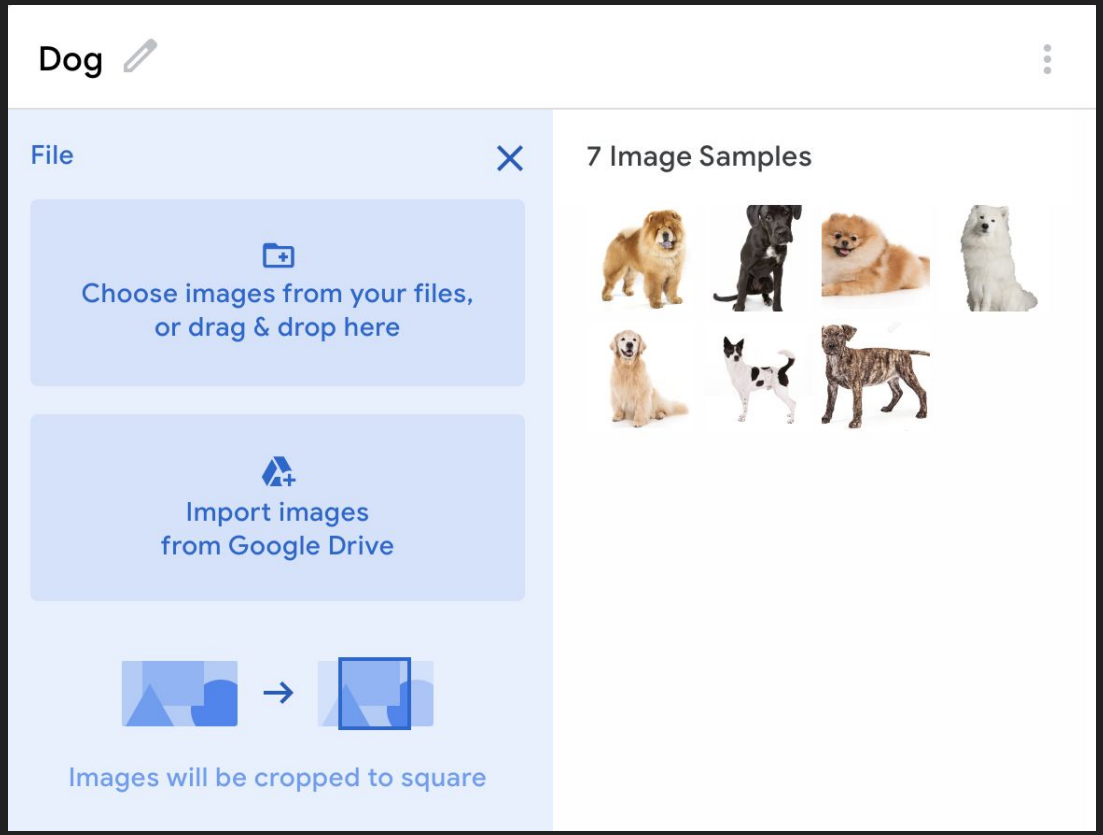


10. Select “dog training data”.
11. Click the blue “Select” button.



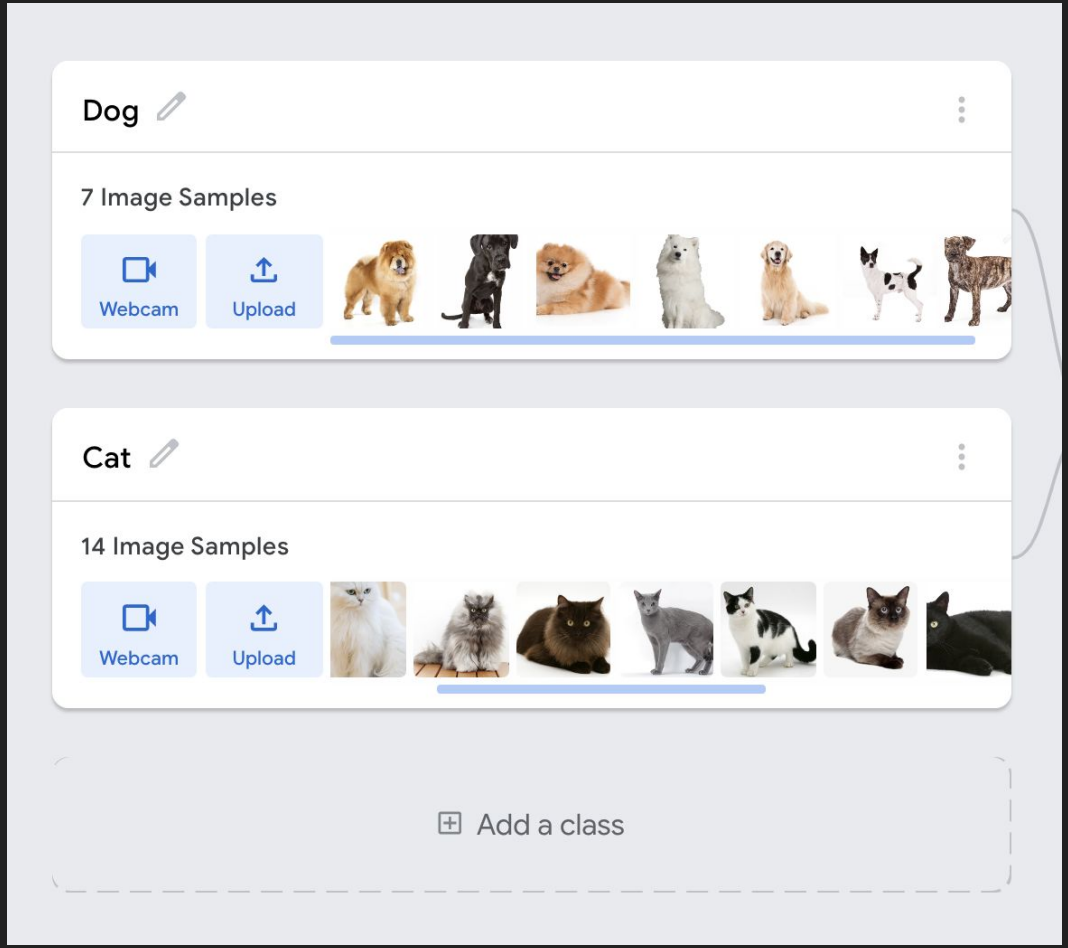
Make sure it’s the training data. NOT the test data.

Your “Dog” class should now look like this:



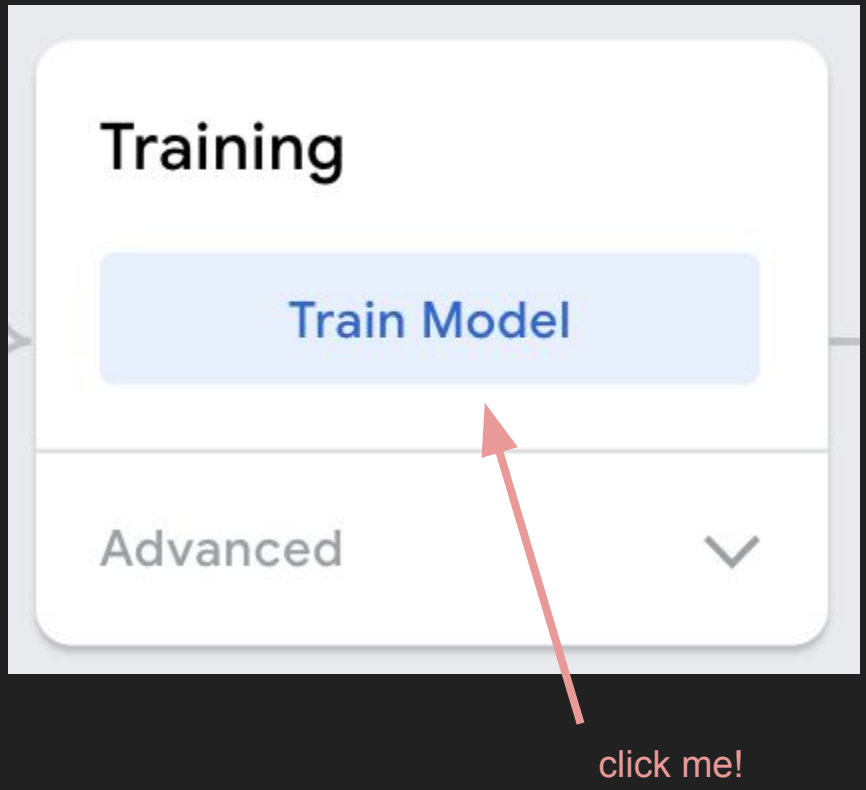
12. Repeat steps 6 - 11 but for “Class 2” and so that we’re training our model with cat **training** data.

Your two classes should look like this once you’re done with all these steps:



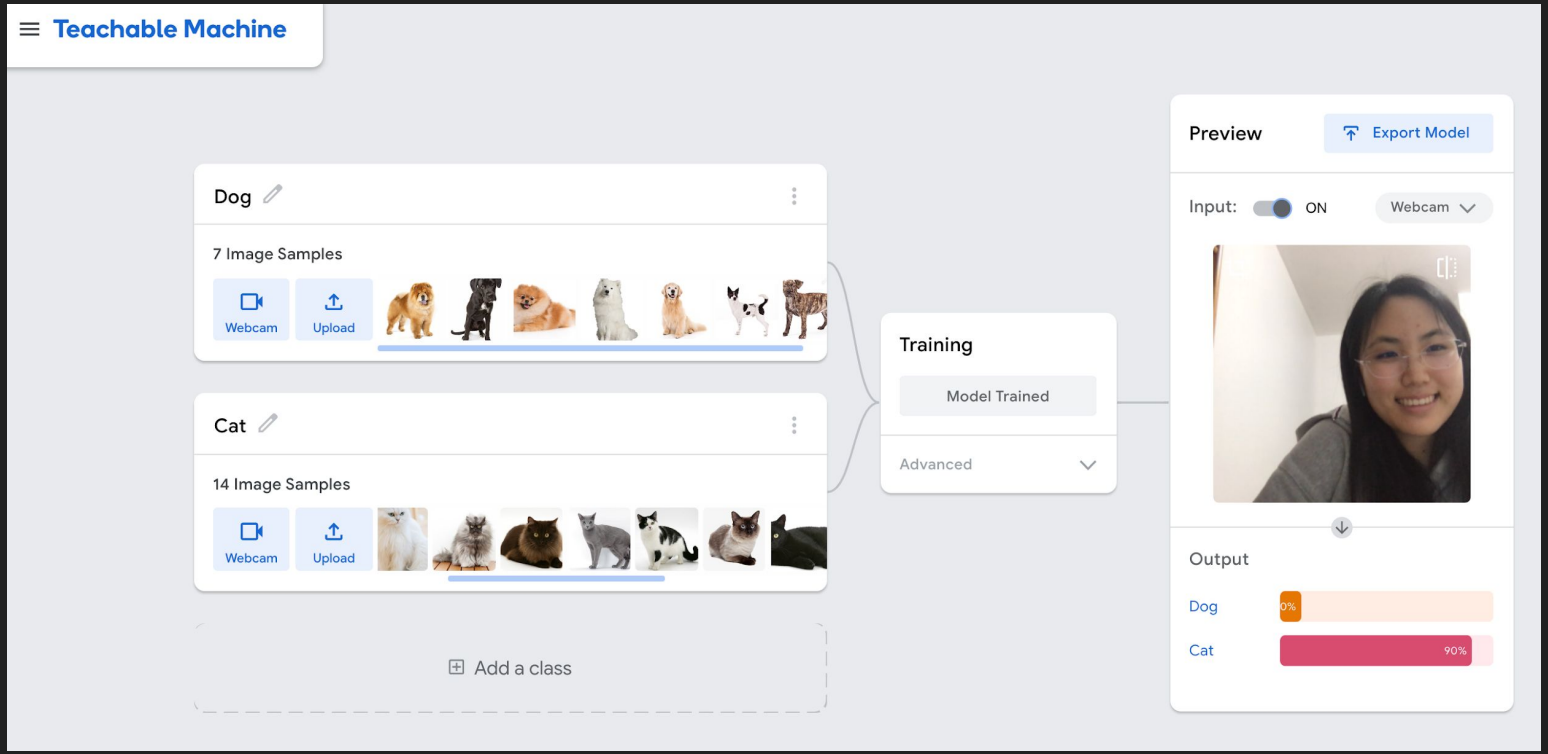
Training your model

13. Now that you've uploaded all your testing images, click the "Train Model" button in the middle of the browser screen.
    a. Make sure to not switch tabs while you're doing this!

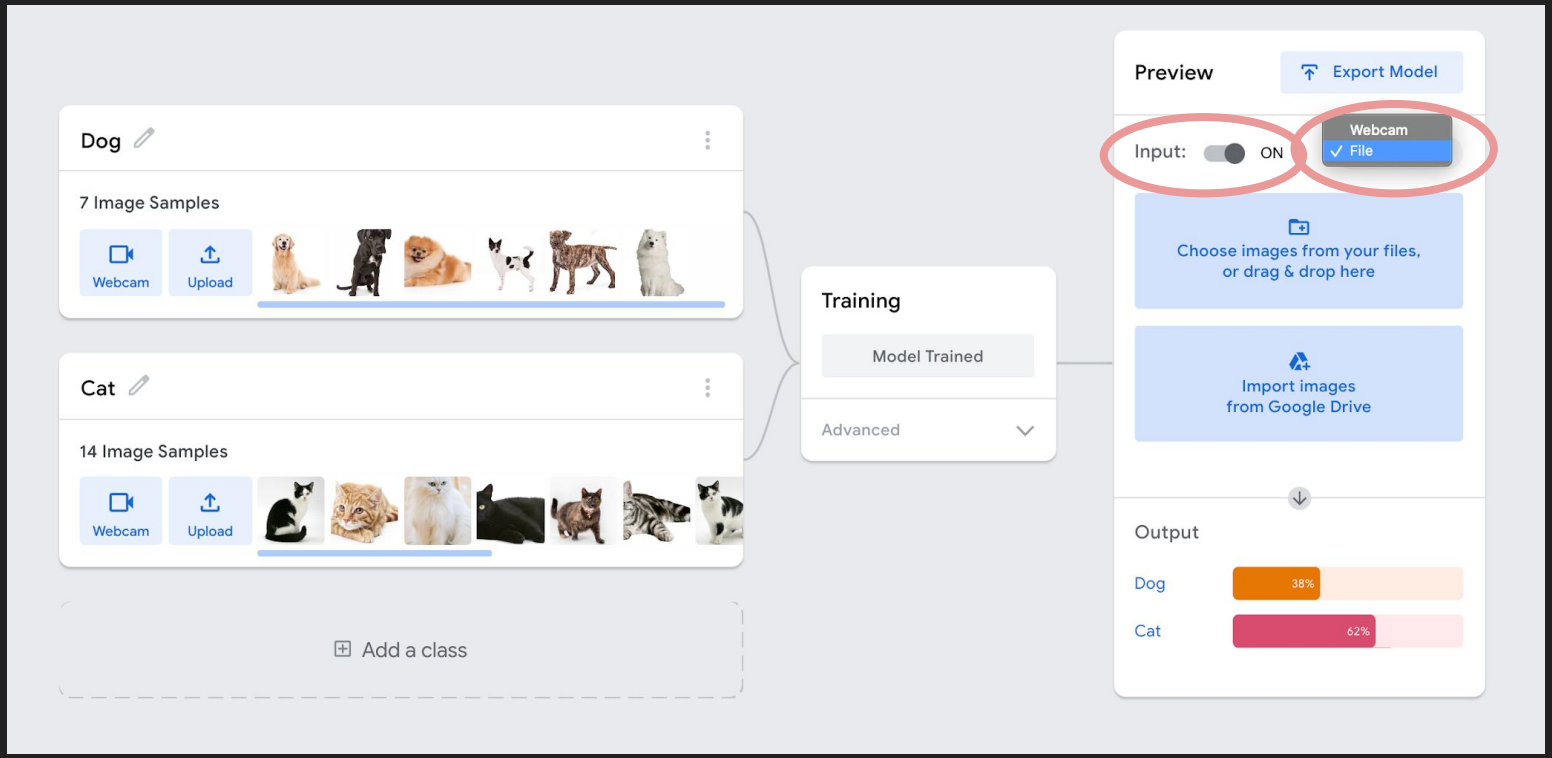


You’re done training your model! Now it’s time to test it out with your test image files. :)

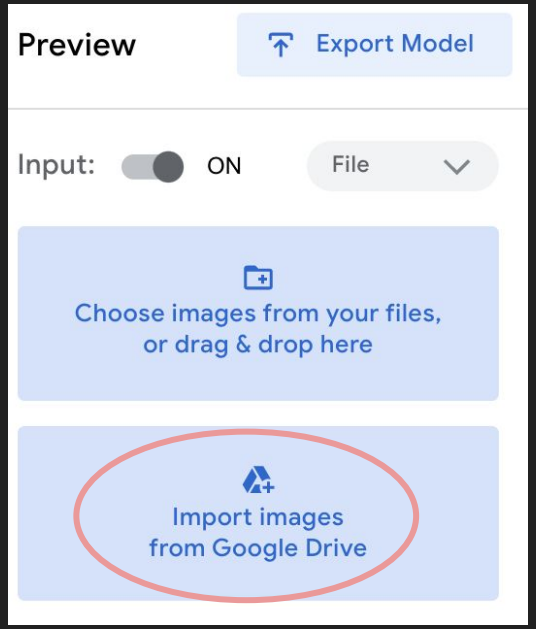
What it should look like now: (with your own face of course)



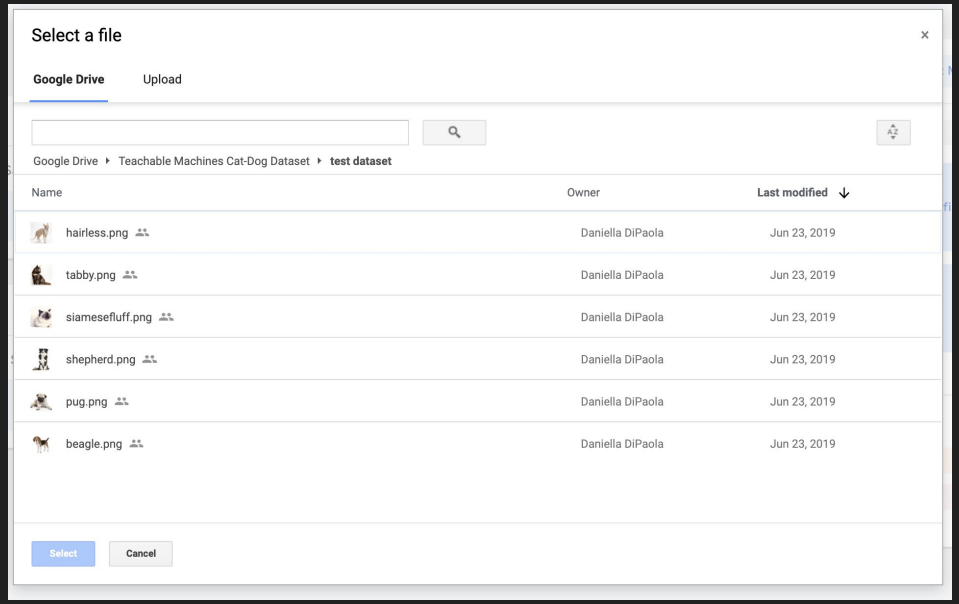
14. Make sure “Input” is toggled to “ON”
15. Click on the “Webcam” dropdown menu, and select “File”.



16. Now that you have your settings correct, click on the “Import Images from Google Drive” button



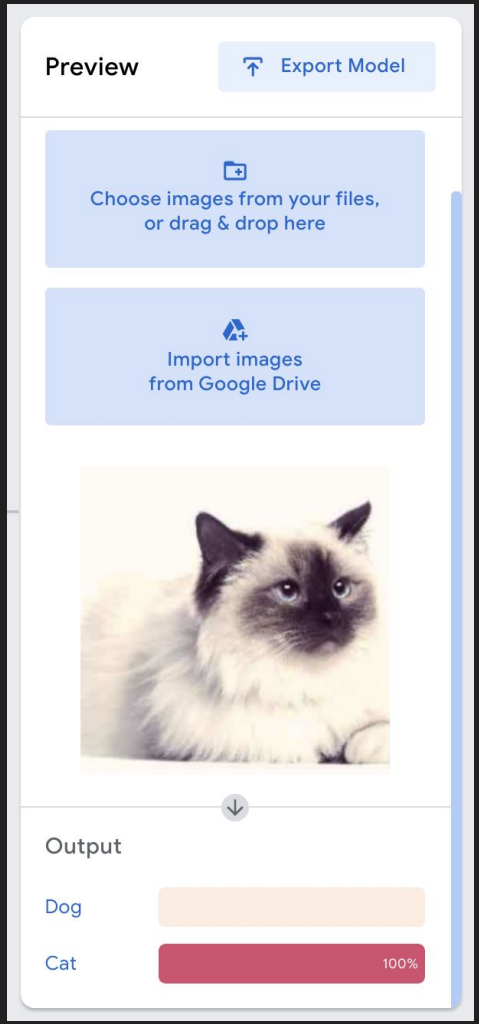
17. Identical to when you uploaded your **training** images, a pop-up menu will appear. Navigate to the **“test dataset”** folder.



18. Select and upload the **TEST** image you've selected, and see what the results are.
    a. In this example, I've selected "siamesefluff.png"

It should look something like this:

Feel free to play around with the rest of the test images!



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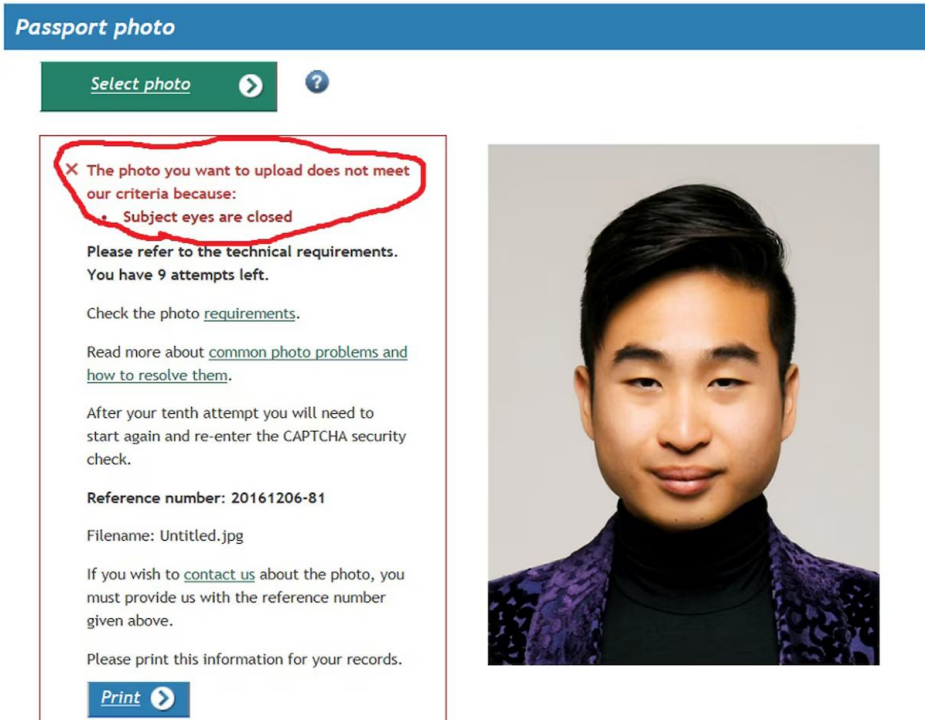
What could possibly go wrong?

Let’s look at some examples of AI predictions…

Case study 1: facial analysis

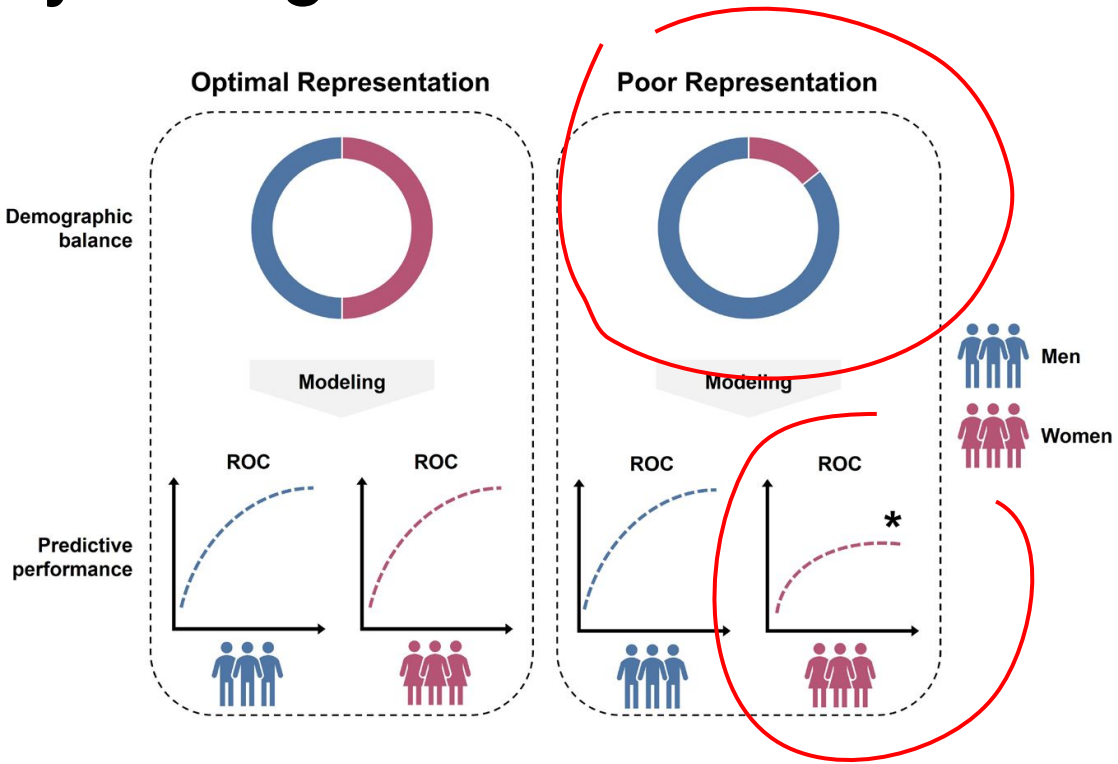


source: https://www.reuters.com/article/us-newzealand-passport-error-idUSKBN13W0RL

Case study 2: predictive policing

source: https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing

Case study 3: diagnosis



source:https://www.dirjournal.org/articles/bias-in-artificial-intelligence-for-medical-imaging-fundamentals-detection-avoidance-mitigation-challenges-ethics-and-prospects/doi/dir.2024.242854

Do you think the predictions these AI made are “fair”?

“Fair” means…

- Does not create discriminatory or unjust impacts when comparing across different demographics (such as race, gender, age)
- Unbiased
- Absence or minimization of bias
- Not favoring one over another

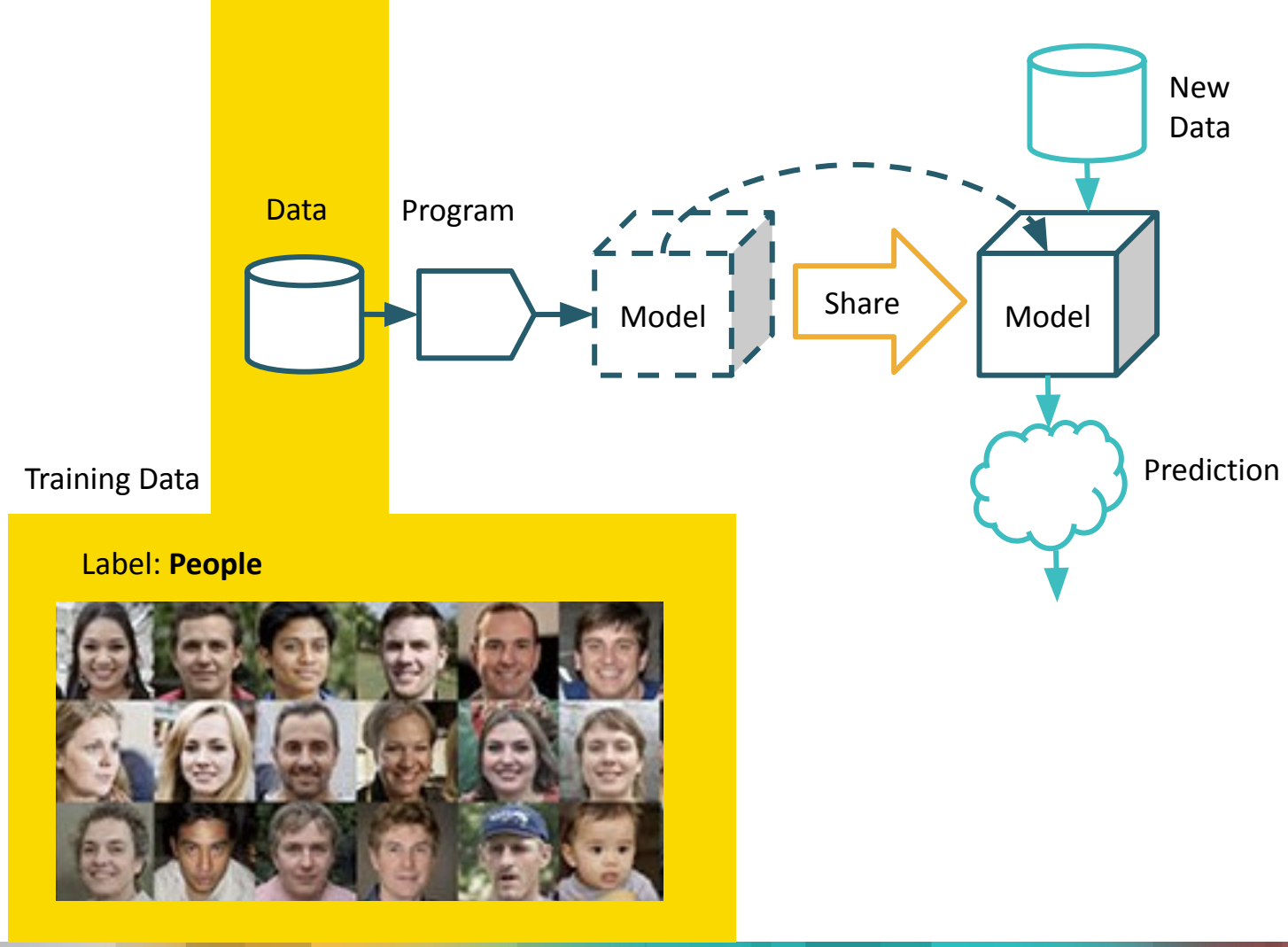
Why should we care?

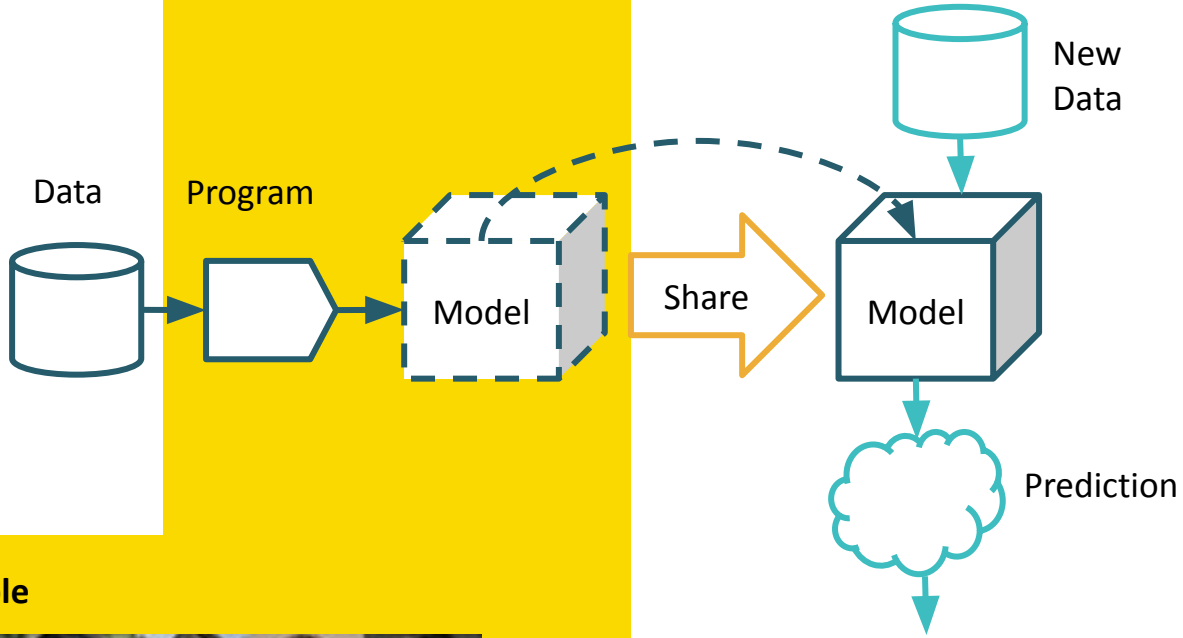
AI impacts….

- Who gets seen / recognized by machines
- Who gets paroled or held
- Who gets shown what information or not
- Who gets loans or is denied
- Who gets interviewed for a job or passed over

Why does AI make bad decisions?

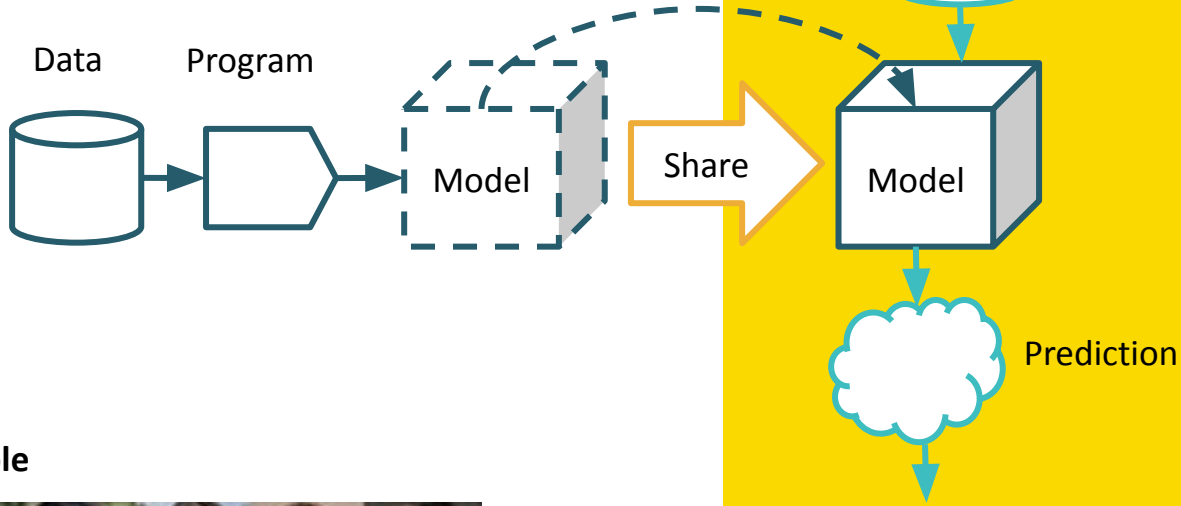
It’s often because of the data…


Data
Program
Model
Share
Model
New
Data
Prediction
Training Data
Label: **People**



Training Data

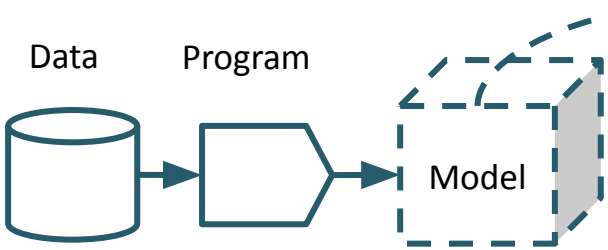
Label: **People**



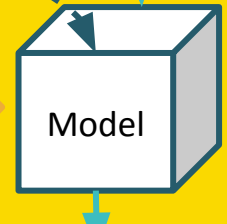
New Data

Training Data

Label: **People**



Share

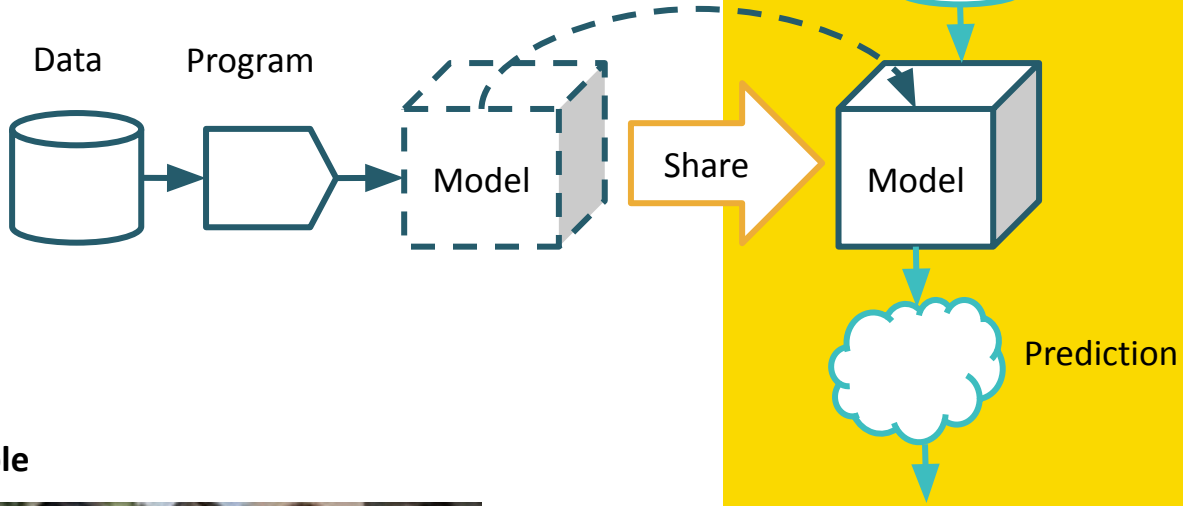


Prediction:
People

New Data

Training Data

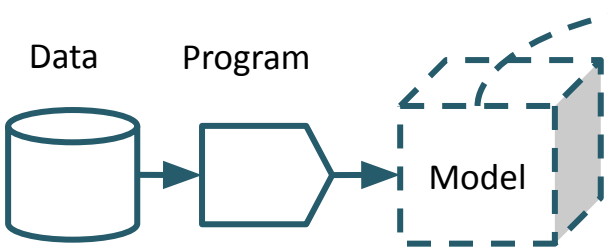
Label: **People**



New Data

Training Data

Label: **People**



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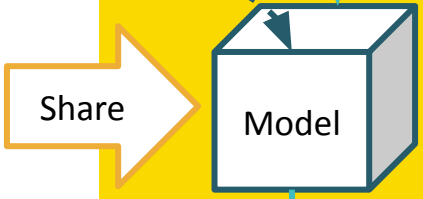


New Data

Prediction:

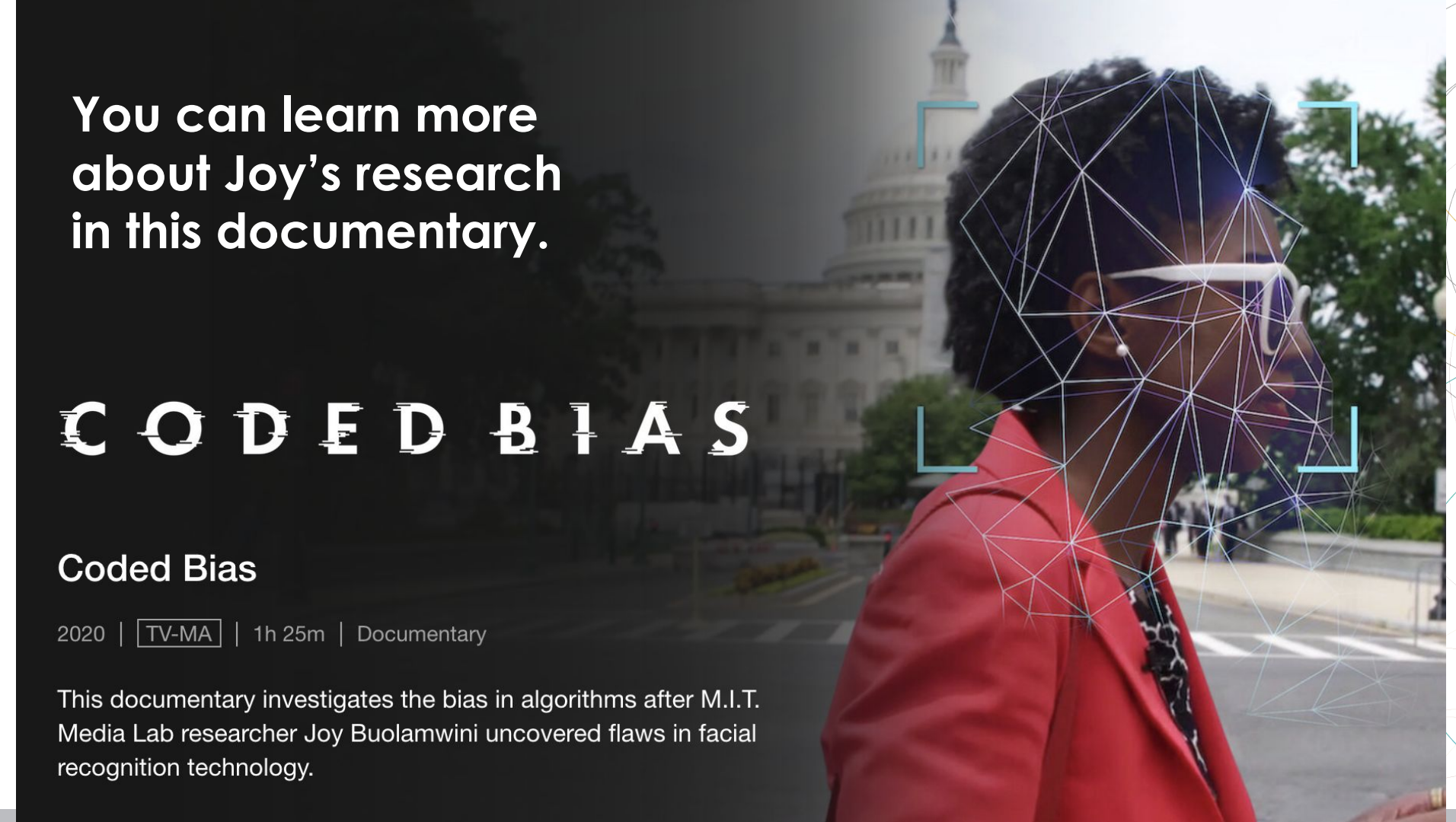
?

Training Data

Label: **People**

Why does this matter?

You can learn more about Joy's research in this documentary.



Coded Bias

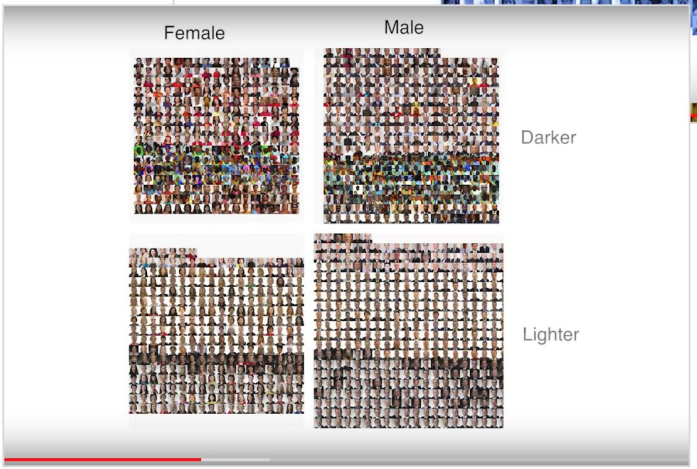
2020 | TV-MA | 1h 25m | Documentary

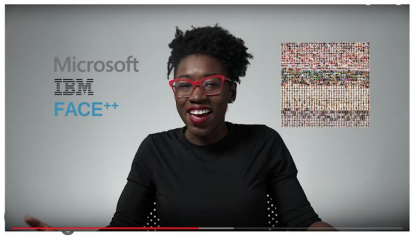
This documentary investigates the bias in algorithms after M.I.T. Media Lab researcher Joy Buolamwini uncovered flaws in facial recognition technology.

Selection bias

Gender Shades

Joy Buolamwini
MIT Media Lab
Feb 9, 2018

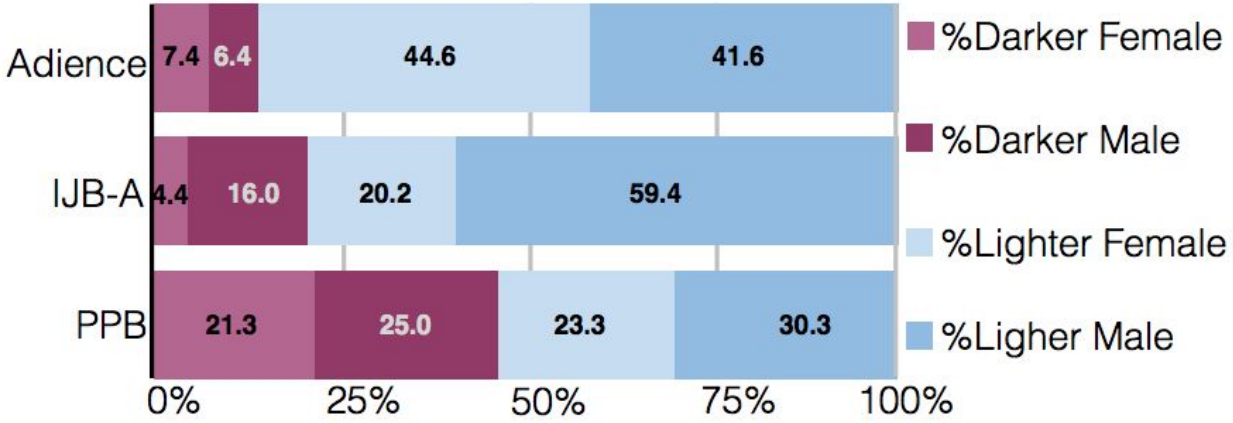




Source: http://proceedings.mlr.press/v81/buolamwini18a.html

Selection bias

common facial analysis benchmarks are not representative



How well do commercial facial analysis programs work?
(Buolamwini & Gebru, 2018)

Selection bias

performance on darker female subset is much worse

Classifier	Metric	All	F	M	Darker	Lighter	DF	DM	LF	LM
MSFT	PPV(%)	93.7	89.3	97.4	87.1	99.3	79.2	94.0	98.3	**100**
	Error Rate(%)	6.3	10.7	2.6	12.9	0.7	**20.8**	6.0	1.7	0.0
	TPR (%)	93.7	96.5	91.7	87.1	99.3	92.1	83.7	**100**	98.7
	FPR (%)	6.3	8.3	3.5	12.9	0.7	**16.3**	7.9	1.3	0.0
Face++	PPV(%)	90.0	78.7	99.3	83.5	95.3	65.5	**99.3**	94.0	99.2
	Error Rate(%)	10.0	21.3	0.7	16.5	4.7	**34.5**	0.7	6.0	0.8
	TPR (%)	90.0	98.9	85.1	83.5	95.3	98.8	76.6	**98.9**	92.9
	FPR (%)	10.0	14.9	1.1	16.5	4.7	**23.4**	1.2	7.1	1.1
IBM	PPV(%)	87.9	79.7	94.4	77.6	96.8	65.3	88.0	92.9	**99.7**
	Error Rate(%)	12.1	20.3	5.6	22.4	3.2	**34.7**	12.0	7.1	0.3
	TPR (%)	87.9	92.1	85.2	77.6	96.8	82.3	74.8	**99.6**	94.8
	FPR (%)	12.1	14.8	7.9	22.4	3.2	**25.2**	17.7	5.20	0.4

How well do commercial facial analysis programs work?
(Buolamwini & Gebru, 2018)

Two Key Fairness Questions for You:

- Are there particular groups of people who may be advantaged or disadvantaged by being included or not included in the training data?
- Would uncertainty and/or errors in predictions about these particular groups cause them harm?

Workshop AGENDA

I. Introduction

II. Demystifying AI Fundamentals

III. Hands-On Activity: Intro to Supervised ML

IV. What could possibly go wrong?

V. More Hands-On AI activities!!

VI. AI Ethics and how to talk about them with our youth

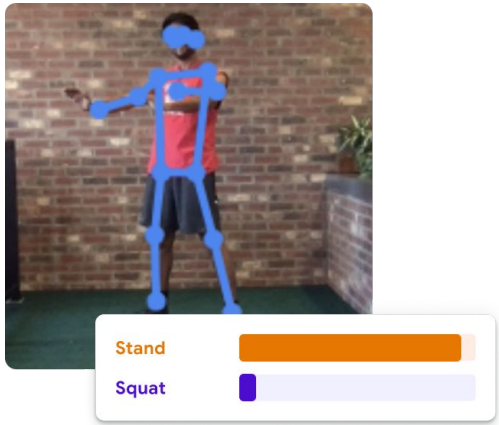
VII. Activities Continued

Access Today's Slide Deck

https://shorturl.at/ybTEC

Activity #1

Can a computer recognize dance moves?



Activity #2

Can a dataset be biased?

Activity #3

Can AI do all my writing for me?

Google Folder

Wifi: **AMNH Education**
PW: **AnTRAILTeKTaV1869**

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https://shorturl.at/ybTEC

HOT Moment

Heated, Offensive, and Tense (HOT) Moments in the Classroom

A HOT Moment is a sudden eruption of tension or conflict in the classroom.

Addressing Hot Moments Through CRP

What can teachers do to make the most of hot moments that arise when introducing bias?

Proactive / Preparation

Reactive / In-the-Moment

Reflection / Debrief / Follow-Up

Addressing Hot Moments Through CRP

What can teachers do to make the most of hot moments that arise when introducing bias?

Proactive / Preparation

- Establish a culture of trust.
- From the beginning of the year, create a classroom culture.
- Teach vocabulary, so students have the language they need to recognize the bias.
- See bias as a natural part of being human.
- Value different perspectives/diversity

Reactive / In-the-Moment

This is a struggle for EVERYONE. It's never easy.

- Create space for everyone to speak.
- Set a time limit so that it doesn't go on.
- Use restorative justice methods.
- Take a break if you need to.

Reflection / Debrief / Follow-Up

- Follow-up with individuals.
- Provide constructive feedback.
- Provide resources that can deepen ideas and perspectives.
- Critique ideas, not individuals.
- Validate emotions.
- Take a break if you need to.
- Make non-disclosure possible.
- Writing as a way for reflection.

Sample HOT Moments

Scenario A: Rise-up
A teacher is introducing the DAILy lesson *Investigating Bias* to a group of 8th graders during the Summer Practicum. Once students see the predictive policing slide they start to call out and talk loudly over the teacher. One student yells, “That’s racist!” Another student calls back, “Yeah! That happened to my aunt! It makes me so mad!” Others yell their stories.

Scenario B: Shut-down
A teacher is introducing the DAILy lesson *Investigating Bias* to a group of 6th graders in their classroom. Once students see the facial analysis slide they get quiet and avoid eye contact. The teacher responds by cold calling on students and asking, “What do you notice about this picture?” The student replies, “That’s just the way it is. We can’t do anything about it.”

Teaching Tips

Scenario A: Rise-up

- It's important to honor students' feelings. Respect the fact that students have these big feelings. If you shut that down too fast you may make them feel that you don't hear or understand them.
- Then, help make the conversation constructive. Harness your passion and bring that passion to finding a solution.

Scenario B: Shut-down

- Give the students an option to reflect on why they have the opinion or feelings they have, e.g., journaling.
- Share stories of positive experiences in which people from the community have made a change in their lives to show that AI is something that we can change together.

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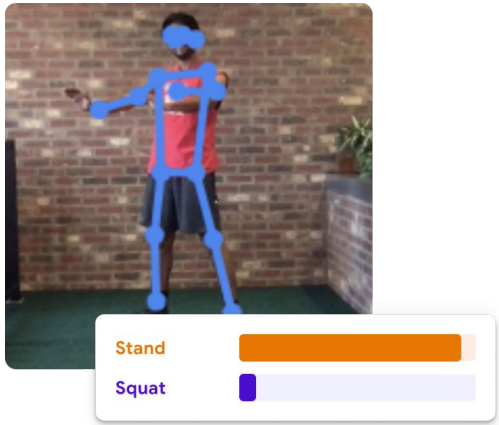

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Thank you.

Resource for You:

Intro to AI Teacher Toolkit