

How Does AI Learn to See?

Name: _____ Period: _____ Date: _____

Directions (read this first!)

1. Read each section. Use the dashed ANNOTATION boxes. They tell you what to circle, underline, or write.
2. Use the vocab box on page 2 if a word is new.
3. Answer the questions on page 3 in complete sentences.

You have 45 minutes. Work silently. Turn the packet in at the end of class.

If you get stuck: re-read directions, then ask a neighbor, then raise your hand with a specific question.

Part 1: The Three Steps

Computers can learn to look at pictures and tell what they show. This is called image classification. For example, a computer can learn to tell apart cat pictures and dog pictures.

To make a computer that can do this, a human designer follows three steps.

Step 1 | Collect and label the data

A designer gathers thousands of pictures. They sort the pictures into groups called classes. Each class is a labeled group. For a cat vs. dog project, the two classes are "cat" and "dog."

Step 2 | Train the model

The designer feeds the labeled pictures to a computer program. The program looks at all the pictures and finds patterns. Once it learns the patterns, it becomes a model. A model is a finished AI that can make predictions.

Step 3 | Test the model

The designer shows the model NEW pictures it has never seen. If it sorts them correctly, the model works. If it makes mistakes, the designer adds more data or fixes the data and tries again.

ANNOTATE THIS SECTION

- Circle the *THREE STEPS* where you see them named.
- Underline the definition of *MODEL*.
- Put a star (★) next to the word that means a labeled group of pictures.

Part 2: When AI Gets It Wrong

AI is powerful, but it can make mistakes. One common mistake is called data bias.

Data bias happens when the pictures used to train the model are not fair or not diverse. The model only knows what it has seen. If it has not seen something, it cannot recognize it.

Example: Face detection that failed

A team built a face detection AI. They trained it with mostly pictures of light-skinned people. When the AI was tested on people with darker skin, it did not work well.

The AI was biased because its training data was biased.

This matters because AI is used everywhere: phones, cameras, hospitals, self-driving cars. If the AI is biased, real people get hurt.

The good news: humans can fix data bias.

We fix it by checking our data. We ask:

- Did we include enough examples?
- Did we include DIFFERENT kinds of examples?
- Who might our AI fail for?
- How can we make our data more fair?

This is the job of a responsible designer. This week, YOU are the designer.

ANNOTATE THIS SECTION

- ▶ *Underline the definition of DATA BIAS.*
- ▶ *Box the example (the face detection story).*
- ▶ *In the margin, write ONE WORD that describes how data bias makes you feel.*

Vocab Box | Study These!

Word	What it means	Example
Image classification	Sorting pictures into groups.	Cat picture vs. dog picture.
Class	A labeled group of pictures.	"Cat" is one class. "Dog" is another.
Training	Teaching an AI by showing it lots of examples.	Show it 100 cat pictures.
Model	The finished AI. It can make predictions now.	Your Teachable Machine project.
Data bias	When an AI is unfair because the training data was not fair.	A face AI that only learned light skin tones will fail on dark skin.
Responsible designer	Someone who tries to make AI fair for everyone.	You, this week.

Reflection Questions

Answer in complete sentences. Use the vocab box if you need help.

1. What are the three steps for making an image classification model? List them in order.

Start with: Step 1: _____. Step 2: _____. Step 3: _____.

2. In your own words, what is data bias?

Start with: Data bias is when _____.

3. The reading said "the AI only knows what it has seen." What do you think this means? Give one example.

Start with: I think this means _____. For example, _____.

4. On Thursday, you will train an AI that watches you lean LEFT or RIGHT to control a sprite. Name TWO things you would do so the AI works for everyone in your class.

Start with: First, I would _____. Second, I would _____.

5. What is ONE question you have about AI? (We will discuss tomorrow.)

Start with: One question I have is _____?
