

Artificial Intelligence

Part 1



How do we know if a person looks happy or sad?

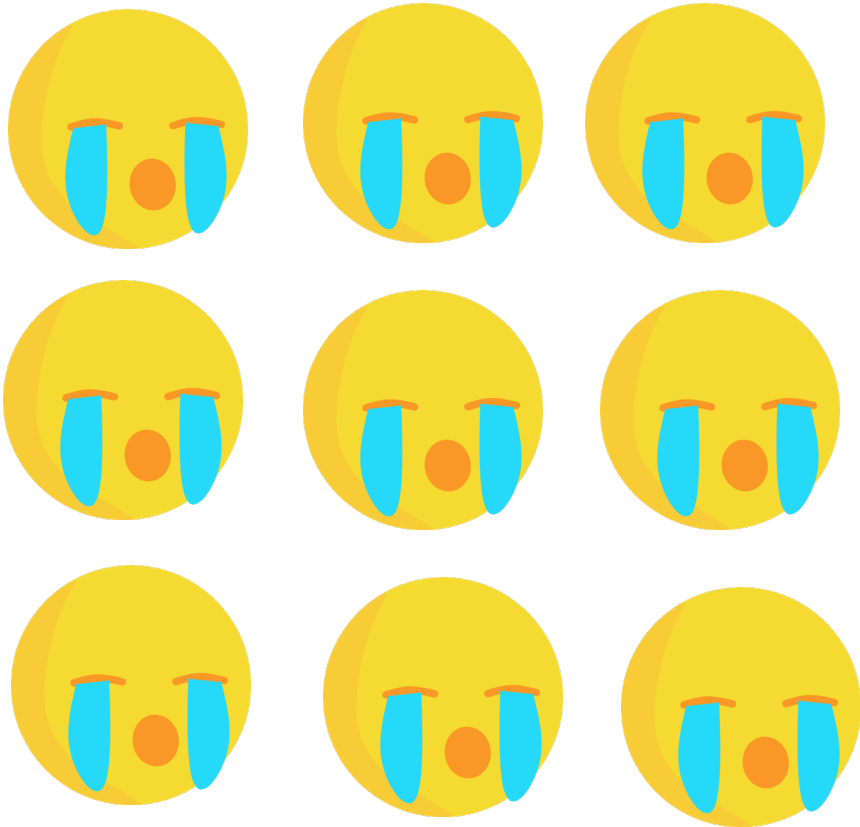


1. Can a machine learn to classify happy and sad faces?



2. What should the examples we give the machine look like?

SAD



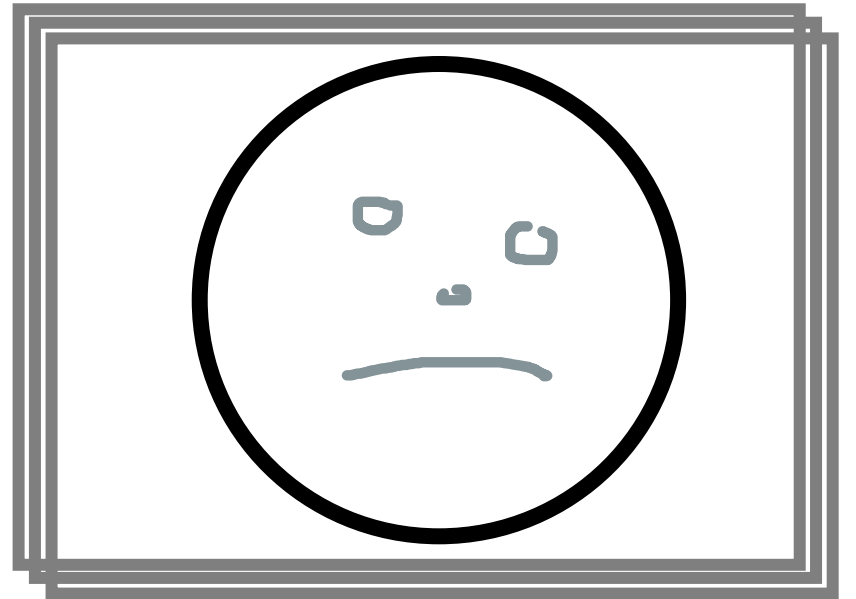
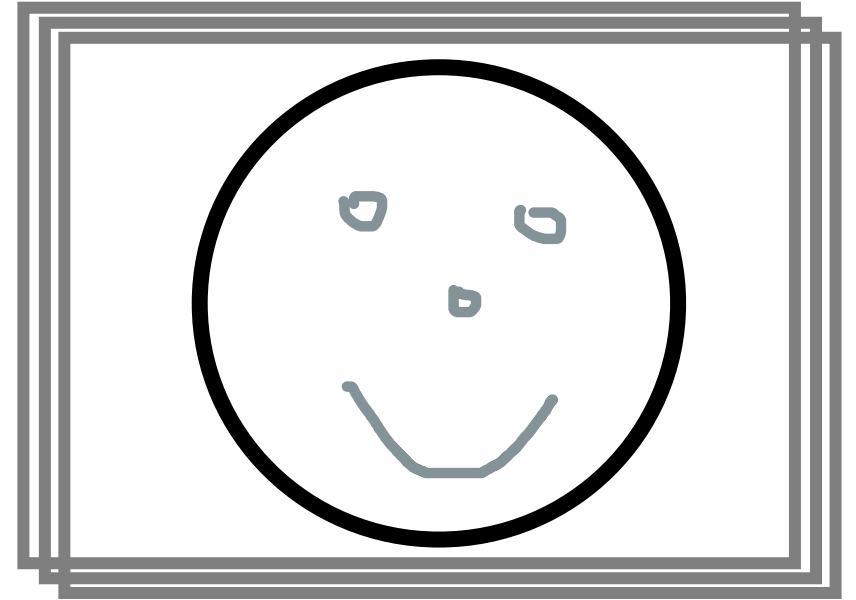
?

HAPPY



3. Create learning data. Use the template to:

- Draw 5* happy faces
- Draw 5* sad faces
- Cut along the lines



* If you are not working in a group, draw 10 happy and 10 sad faces.

4. Prepare your machine.

- Navigate to Google's Teachable Machine – Image project:
<https://teachablemachine.withgoogle.com/train/image>
- Rename Class 1 'Happy' and Class 2 'Sad'

5. Upload your learning data

- Use the webcam to take pictures of your drawings:
 - Put a sheet of colored paper behind the drawing as a background.
 - Hold the drawing and background close to the lens so the drawing fills most of the space.
 - Use the webcam to take a picture. It is ok to have doubles.
 - Each class (happy or sad) should have at least 20 pictures.



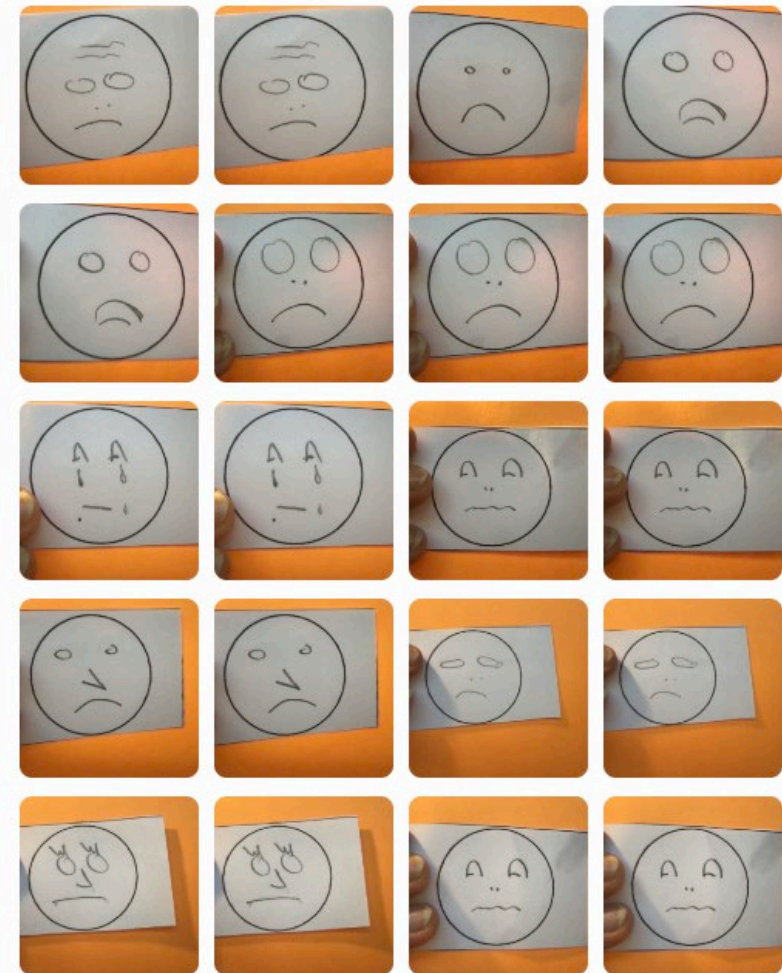
20 Image Samples

Happy



20 Image Samples

SAD



6. Train your model

- Click the train model button.

7. What is machine learning?

Watch

<https://www.youtube.com/watch?v=59bMh59JQDo>

Can you think of a rule a program can use to classify your drawings as 'Happy' or 'Sad'?

Using the rule, how would the program classify these drawings? How would you classify them?



Some tasks that are easy for humans are not easy to get a computer to do using classical computer programming.

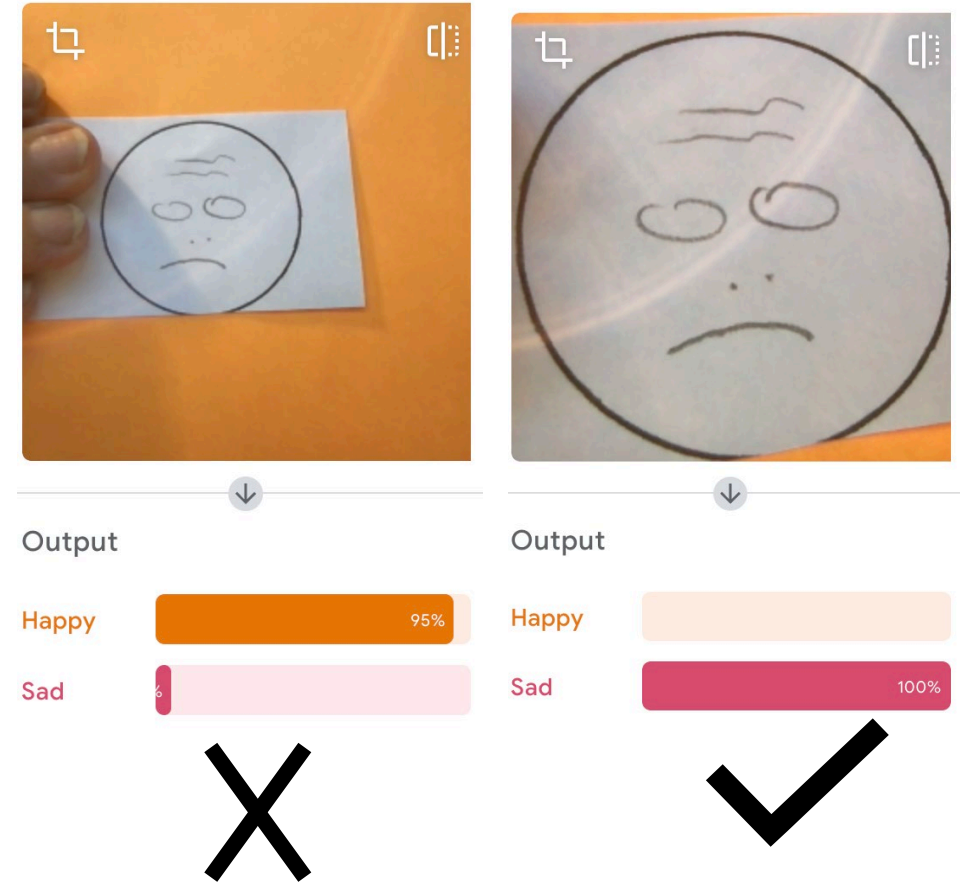
8. Will your machine be biased?

9. Test the machine

- Show the machine a few of your learning data drawings.
- Can the machine classify each drawing correctly?



- Try moving your drawing closer to and further from the webcam.
- Can the machine classify each drawing correctly now?
- Does your machine show bias? Why or why not?

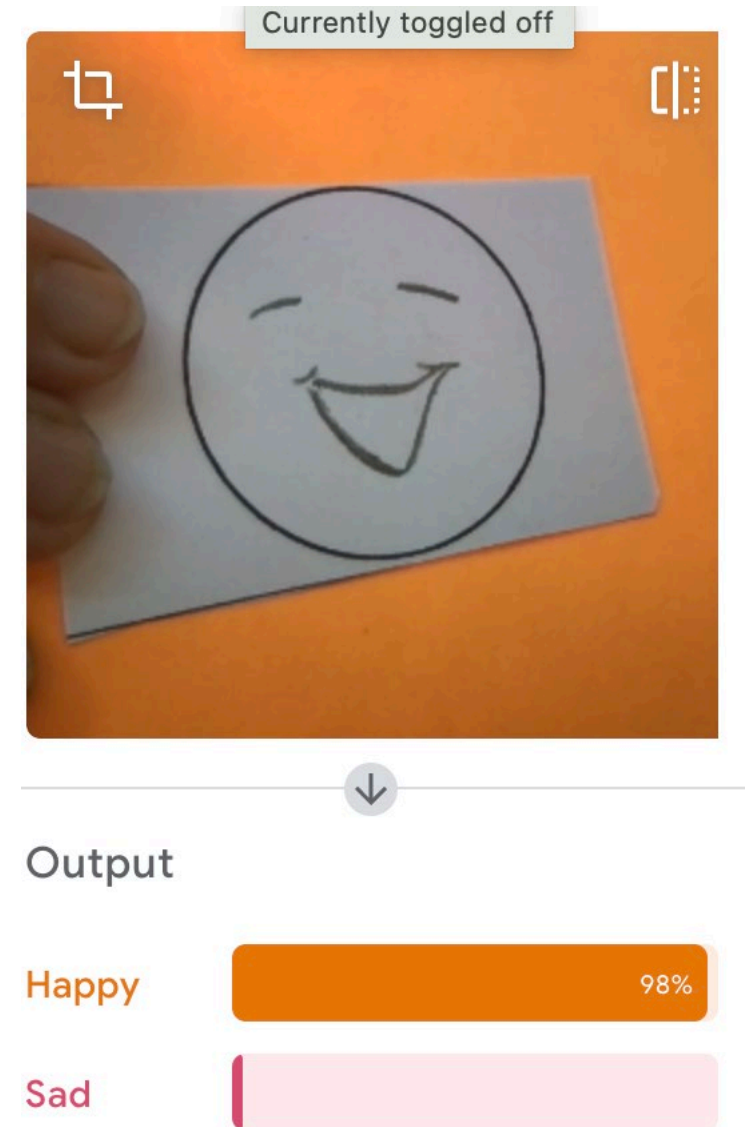


10. Improve your machine

If you detected bias, add more learning data and retrain the model

11. Test the machine with other groups' data.

- Show the machine a few drawings other people made.
- Can the machine classify these correctly?



Collect test results in your table.

Classification by Machine	Number of	
	Happy Drawings	Sad Drawings
Happy [>65% Happy]	Make a mark here each time a happy drawing is classified as happy.	Make a mark here each time a sad drawing is classified as happy.
Sad [>65% Sad]	Make a mark here each time a happy drawing is classified as sad.	Make a mark here each time a sad drawing is classified as sad.
Unclear	Make a mark here each time a happy drawing is not clearly classifiable.	Make a mark here each time a sad drawing is not clearly classifiable.
Total Tested	Count the total number of happy drawings tested.	Count the total number of sad drawings tested.

12. Test the machine on unfamiliar data.

- Change the background color, draw with markers, add more details, etc.
- Can the machine classify these correctly?

13. Emotion AI

- AI tools that can capture and analyze human emotions expressed in writing, spoken word, in a photo, or in a video.



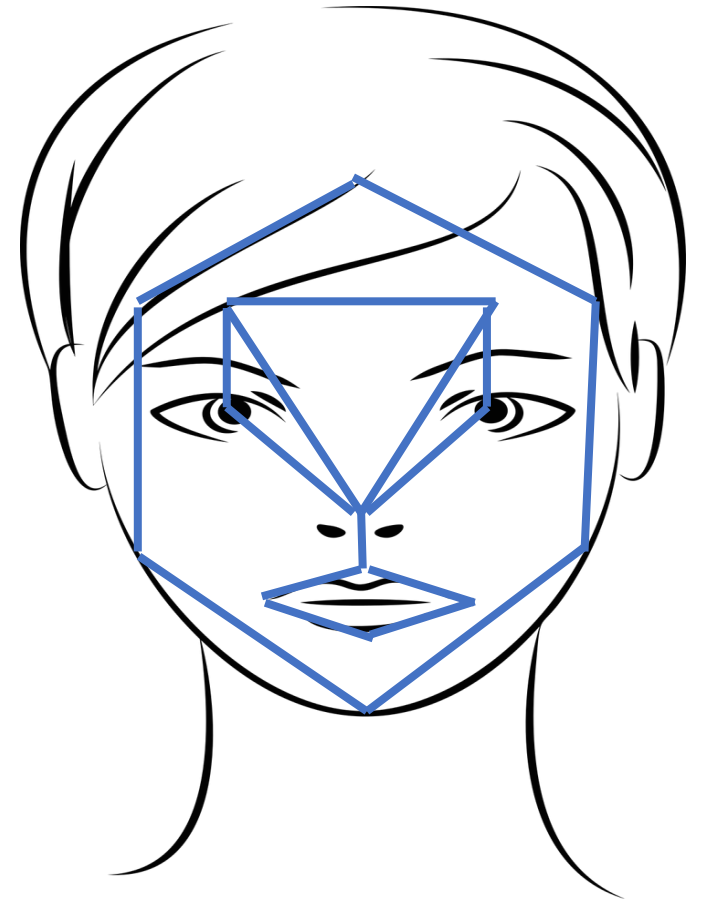
Emotion AI:

- ✌️ What problem does it solve?
- 👉 How can it be misused, or what could be some unintended consequences?



14. Facial recognition

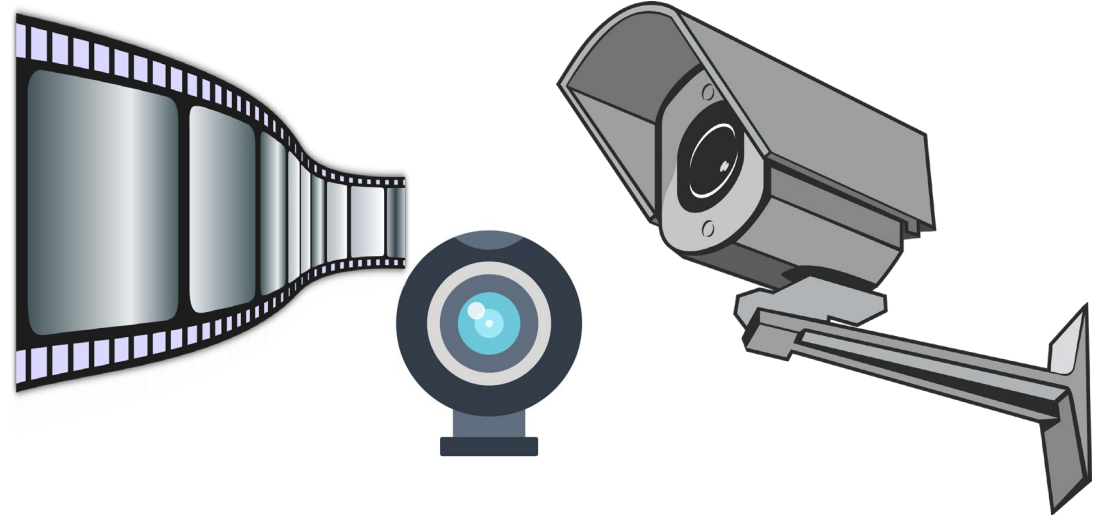
- AI tools that can recognize a specific person in a photo or a video regardless of the emotional expression and across ages.



Facial recognition:

👉 What problem does it solve?

👎 How can it be misused, or what could be some unintended consequences?



Artificial Intelligence

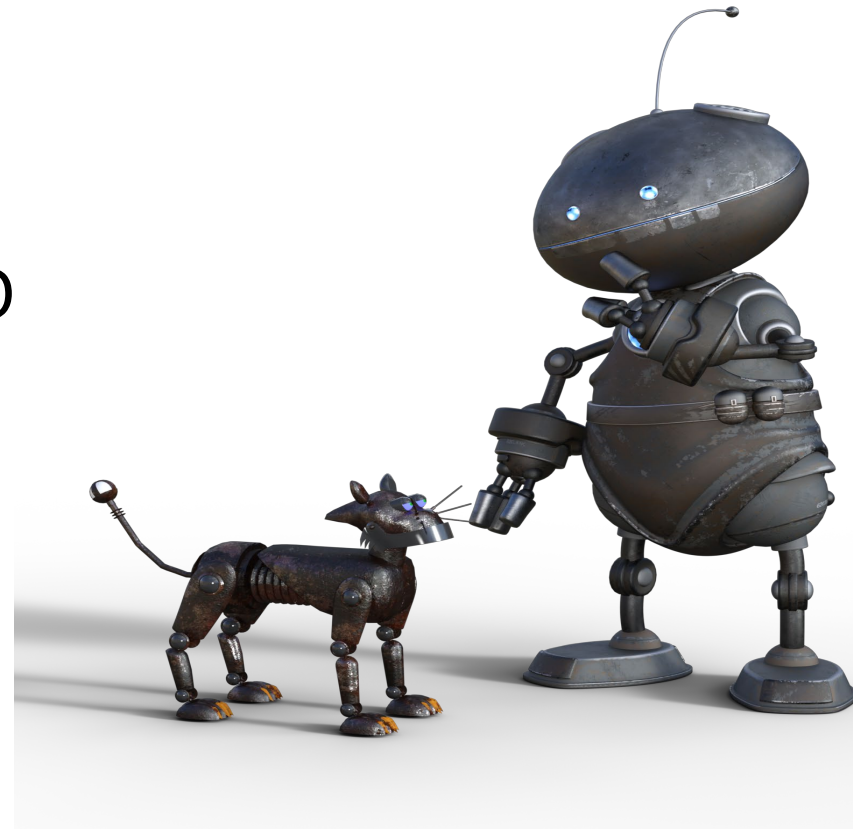
Part 2



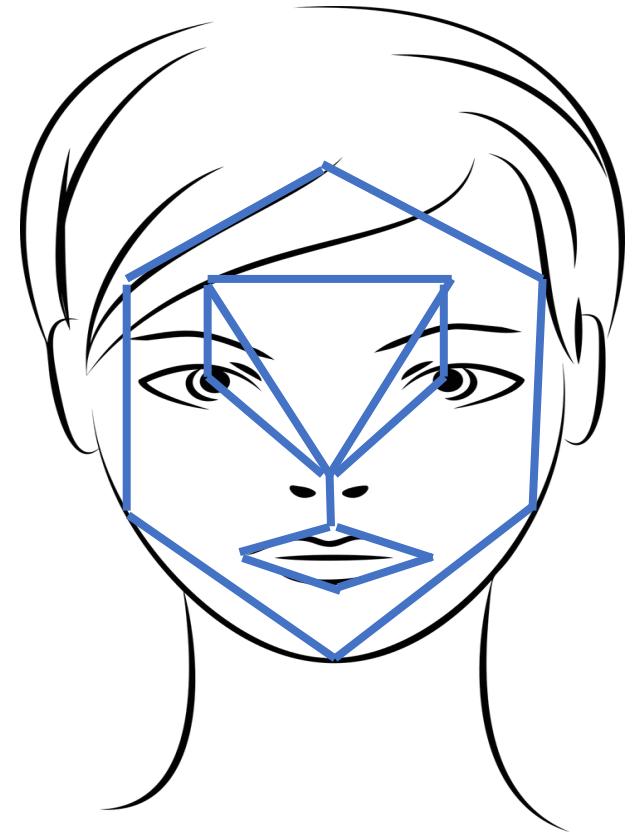
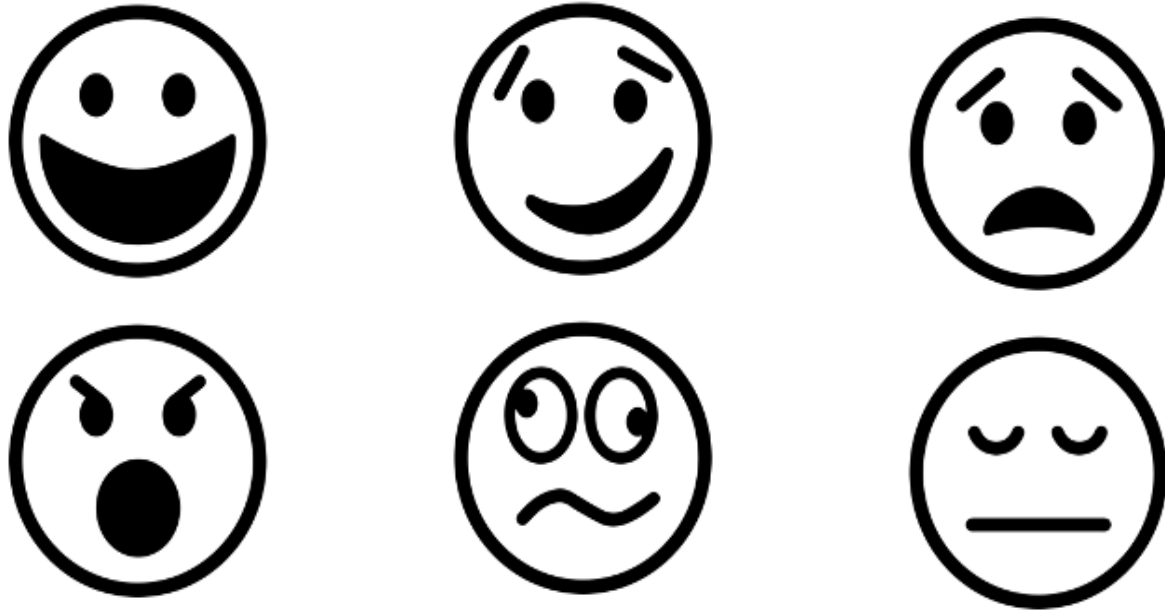
New technology and innovation can bring solutions.

Example: Smart Robots:

☞ Can take on dangerous tasks or do jobs where strength, endurance, and problem solving are needed.



How can facial recognition or emotion AI change the world? In a group, **imagine** a facial recognition or emotion AI application that brings a solution.



New technology and innovation often come with unintended consequences.

Example: Smart Robots:

👉 Could be used to commit crimes.



Brainstorm your new AI application

What problem(s) does it solve?

How can it be misused?

What could be some unintended consequences?



Use the medium of your preference (text, illustrations, video, slides, collages storyboard, etc.) to demonstrate to your peers how this AI invention will impact the world.

Include:

- what the invention is and how it works
- what problem(s) it solves
- who uses it or encounters it and what will it do for them
- some unexpected uses or consequences; what could go wrong