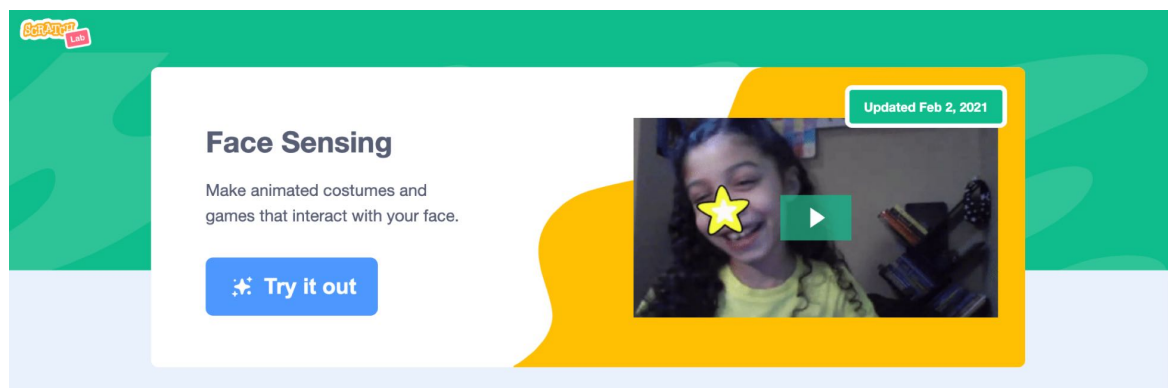


Activity 2.2.1 - Facial recognition with Scratch Lab

Duration	90 minutes
Requirements	Having followed Activity 1 in Module 2
Hardware and Software tools used	<i>Required:</i> a computer with camera, and an Internet connection. Access to Scratch Lab (Face Sensing) https://lab.scratch.mit.edu/face/
Type of assessment	Class presentation / Group or individual work



Procedure (steps)

Scratch lab is an online platform that lets you test coding using Scratch. It integrates a module called Face Sensing that allows face recognition through the computer camera, supporting simple coding activities that combine computational thinking with AI and artificial image recognition.

Anticipatory Set

1. Introduce students to Scratch Lab (previous work on Scratch language is recommended)
2. It is possible also to view or use the demo material present in the tool (loading a project presented in the main page of Face Sensing)

Direct Instruction & Guided Practice

- Coding for facial recognition
 - a. Introduce students to Scratch language and explain the use of the different components used in the Face sensing extension

- b. Let students experiment with different components for placing images on different parts of their faces (nose, forehead, etc.) and testing how the face recognition works (test if the system recognise the face when a part of the face is hidden or occluded with a book or another object)

Independent Practice

- Students can experiment at home different ways for using Face sensing
- Students can create a short presentation of their experience, a one page document or poster to describe what it can be done with this tool

Closing

- After this activity the teachers can involve the class to discuss topics related to facial recognition and privacy (see resources for teachers)

Troubleshooting

Possible issue	Possible solution
Scratch Lab and languages	Scratch lab is provided in different languages
Privacy concerns	The tool does not store information from the camera and only the computer can sense the face in front of the camera. No data is stored or sent to Scratch or any other site.

Resources for teachers

Below are some online resources that may be useful to facilitate the transmission of concepts by teachers during the proposed activity in the classroom:

1. <https://www.youtube.com/watch?v=H4lZ-2YPt-4>
Video on Smart City featuring Facial Recognition [NEC Official]
 - Hint for inspiration/discussion: AI and facial recognition for marketing strategies
 - Hint for inspiration/discussion: AI and facial recognition for tracking criminals
2. <https://www.youtube.com/watch?v=5R0WaxwHtaA>
Whiteboard animation explainer video for a facial recognition software company
 - Brief definition of facial recognition

- Hint for inspiration/discussion: AI and facial recognition for educational setting etc.
- 3. <https://www.youtube.com/watch?v=zts4s2lbANo>
 - How facial recognition can be used to apply face filters or to match a user's face with faces in artworks (app "Art selfie" by Google)
- 4. https://www.teachermagazine.com/au_en/articles/ai-classroom-activity-facial-recognition
 - AI classroom activity: Facial recognition
 - 'Unplugged' facial recognition task
- 5. <https://www.kaspersky.com/resource-center/definitions/what-is-facial-recognition>
 - What is facial recognition?
 - How does facial recognition work?
 - How facial recognition is used
 - Examples of facial recognition technology
 - Advantages of face recognition
 - Disadvantages of face recognition
- 6. <https://www.nytimes.com/wirecutter/blog/how-facial-recognition-works/>
 - How facial recognition software works
 - A brief history of facial recognition
 - The arguments for and against facial recognition
 - The future of facial recognition and regulation
 - Privacy tips for using everyday things with facial recognition

Activity 2.2.2 - Using conditionals in Scratch Lab

Duration	90 minutes
Requirements	Having followed Activity 2.2.1 and some skills of programming
Hardware and Software tools used	<i>Required:</i> a computer with camera, and an Internet connection. Access to Scratch Lab (Face Sensing) https://lab.scratch.mit.edu/face/
Type of assessment	Class presentation / Group or individual work

Procedure (steps)

Advanced activity using Scratch Lab Face Sensing for creating a small game using the "when" and "if" components

Anticipatory Set