

Module Two

How AI works

Module Two - Topic 1

Algorithms and machine learning steps

Activity 2.1.1 - Image recognition with “pen&paper”

Activity 2.1.2 - Teachable machine with Google

Activity 2.1.3 - Using an AI image generator

Module Two - Topic 2

Facial recognition and basic programming concepts

Activity 2.2.1 - Facial recognition with Scratch Lab

Activity 2.2.2 - Using conditionals in Scratch Lab

Module Description	
The second module introduces how Artificial Intelligence works, focusing on explaining concepts such as algorithms and machine learning. In addition, the module covers how AI systems are trained and behave, and introduces educators to basic concepts of programming such as if-else statements. Thanks to the class activities, with instructional videos and practical activities, the trained teachers will be able to introduce students to the programming environment and to transfer them basic computational skills and concepts, being able to orchestrate the use of digital resources in teaching and learning AI technology.	
Main subject(s): Computer Science, Mathematics	
Time allotment: 4 hours to complete the module	
Topics and activities	
Topic 2.1	Algorithms and machine learning steps: Activity 2.1.1 Image recognition with “pen&paper”; Activity 2.1.2 Teachable Machine with Google; Activity 2.1.3 Using an AI image generator
Topic 2.2	Facial recognition and basic programming concepts: Activity 2.2.1 Facial recognition with Scratch Lab; Activity 2.2.2 Using conditionals in Scratch Lab

Digital competences (DigComp 2.1)

Area 3 - Digital content creation:

- 3.1 Developing digital content
- 3.2 Integrating and re-elaborating digital content
- 3.4 Programming

Area 5 - Problem solving:

- 5.2 Identifying needs and technological responses
- 5.3 Creatively using digital technologies
- 5.4 Identifying digital competence gaps

DigCompEdu competences

Area 1 - Professional Engagement

- 1.1 Organisational communication
- 1.2 Professional Collaboration
- 1.3 Reflective Practice

Area 2 - Digital Resources:

- 2.1 Selecting digital resources
- 2.2 Creating and modifying digital content

Area 3 - Teaching and Learning:

- 3.3 Collaborative learning
- 3.4 Self-regulated learning

Area 5 - Empowering Learners:

- 5.3 Actively engaging learners

Area 6 - Facilitating Learners' Digital Competence:

- 6.1 Information and media literacy
- 6.2 Digital communication and collaboration
- 6.3 Digital content creation
- 6.5 Digital problem solving

Educational goals

At the end of the second module students will have acquired an overview of how some AI systems work. The activities presented will allow students to understand: (i) how an AI can ground its apparent intelligence on algorithms previously written by a human programmer, (ii) how a feature extraction can simulate the behavior of the human brain in recognizing faces and (iii) how a computer can act as a human being when conversing/answering questions.

Module Two - Topic 1

Algorithms and machine learning steps

Duration	120 minutes (60 minutes each activity)
Subjects	Computer science, Technology
Summary	Learn how machine learning algorithms work by acting out the algorithm physically without the use of a computer. Then students will bring the acquired notions in practice working with a software for training basic image recognition models.
Glossary	Machine learning, Algorithm, Deep learning, Natural Language Process

Learning objectives

Students will learn how machine learning algorithms work, having an understanding of data training and classification. The activity will be conducted both through non-digital material (activity 2.1.1) and with the use of Google Teachable Machine (activity 2.1.2). Through these experiences, students will learn how to train an image model and will be able to use Teachable Machine also for further experiments.

Advanced level

For more advanced use of Teachable Machine, teachers might find new resources from this website (in English) <https://github.com/SashiDo/awesome-teachable-machine>

There are examples of algorithms that can be trained with Teachable Machine, such as a system for recognizing how ripe a banana is

(<https://medium.com/@warronbeebster/teachable-machine-tutorial-bananameter-4bffa765866>)

or detecting different sounds

(<https://medium.com/@warronbeebster/teachable-machine-tutorial-snap-clap-whistle-4212fd7f3555>). Other interesting examples to show in class is an application based on Teachable

Machine that blurs YouTube Video if the user does not sit straight

(<https://atharvapatil.github.io/teachable-browser/>) or that plays Rock, Paper, Scissors

(<https://silviueftimiedev.web.app/#>). Students might interact with such applications and then reflect on which data the applications have been trained.

Moreover, it is possible to combine Teachable Machine with other tools such as Arduino, as presented here

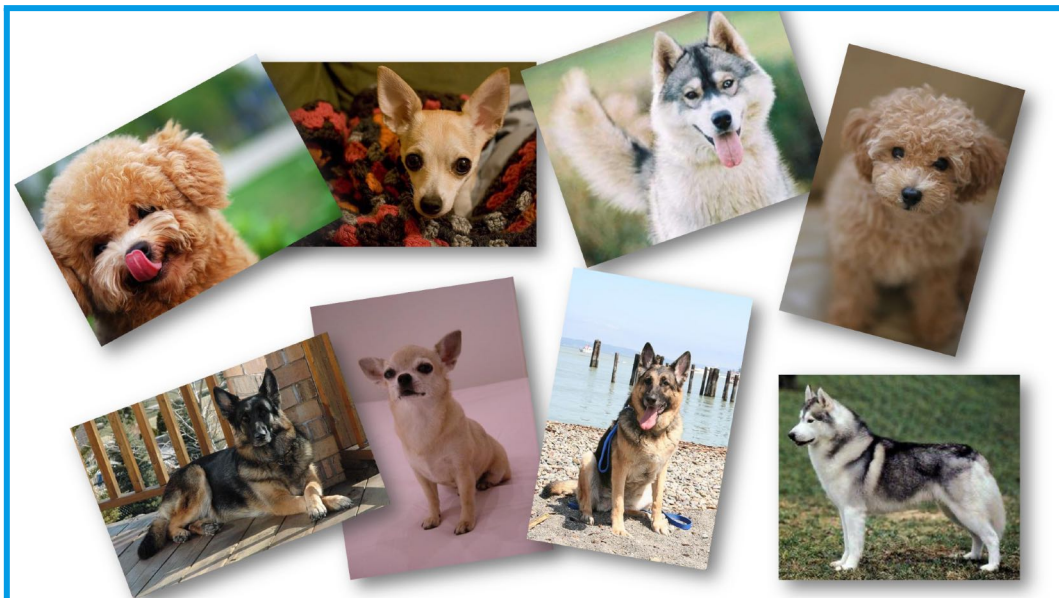
<https://create.arduino.cc/projecthub/alankrantas/use-teachable-machine-ai-to-control-anything-2ad1ee>

Activities overview

Activities	Modality	Level
Activity 2.1.1 Image recognition with “pen&paper”	In class / Online	Basic
Activity 2.1.2 Teachable machine with Google	In class / Online	Basic
Activity 2.1.3 Testing an AI image generator	In class / Online	Basic

Activity 2.1.1 - Image recognition with “pen&paper”

Duration	60 minutes
Requirements	Having followed Module 1
Hardware and Software tools used	White sheets of paper, sheets of paper with some printed figures, some pencils/pens. NO hardware/software required.
Type of assessment	- Multiple choice questions test (e.g, regarding some definition such as feature extraction, database search, similarity score) - Open question (e.g. students describe one example in which the facial recognition system can be useful in the future)



Examples of dogs images, printed on different pieces of paper for the “Image recognition - pen&paper” activity of Module 2. Images are available from <http://vision.stanford.edu/aditya86/ImageNetDogs/>

Procedure (steps)

Anticipatory Set

These activities are optional and can be performed for anticipating the actual activities

1. Ask if students have already tried an image recognition system and provide any examples (you can find some of them following the links below, in the “resources for teachers” part);
2. Ask the class questions such as “How do we recognize an image and how does a machine make it?”
3. Image recognition can recall a black box: users show images to a camera → something happens inside the system → the computer is able to recognize/match the image. It is important to understand how we recognize images → ask students to list the steps they would do to recognize an image → explain that what they are doing is following an algorithm;
4. Explain that computers follow algorithms during the image recognition procedure as well (feature extraction, qualitative and quantitative data)

Direct Instruction & Guided Practice

Preparation: The teacher prepares print outs of the different images of dogs included in the resources for Teachers (or uses the digital versions). Image of the table for classifying dog breeds should be also provided to the students

Classroom discussion: Before the activity, the teacher can explain to the class that image recognition is not as easy as it seems and students will discover how difficult it can be to teach a machine to recognize a dog breed from pictures of dogs. A computer can match two photos pixel-by-pixel to check if there is an exact match. However, in real life the same element (for example dogs) may look differently in each photo due to different characteristics, perspective and posture. As humans we are able to recognise elements in a photo and we are very good at recognizing faces of other humans because our brain extracts and matches key features of the person inside the photos. The goal of this activity is to illustrate the key AI concept of feature extraction – conversion of data in the original format (for example, an image) into a series of quantitative or qualitative features that can be used to distinguish different objects in the original data. A computer cannot ‘see’ a photo like a human, but it is good at comparing a list of features. By converting the original image into a series of features, a computer can behave like humans in terms of recognising the dog inside each photo.

Activity presentation: This activity consists of two parts – feature extraction and database search. The class is divided into groups of 4-5 students, all groups created except one will be

involved in the “feature extraction” step. Then the group completes the table, answering the questions about their dogs.

Feature extraction:

- a. In the “feature extraction” step, we gave each group a “breed table” and for each person of the group a randomly chosen picture of a dog from the same breed (resulting in a different breed for each group). Students are instructed not to show the image to anyone of the other groups.
- b. Ask the students to answer the questions in the table (body size fur color, hair length, hair colour, etc., see table in resources) on another sheet of paper;
- c. Then the group comes together and fills out a single “breed table” for the group.

Database search:

- d. Choose the group who did not participated from the “feature extraction” phase and tell them that they will be the “AI detective”;
- e. assign them a picture of dogs printed on a piece of paper;
- f. ask the “AI detectives” to answer the questions on the “breed table”;
- g. When they have finished, in turns the “AI detectives” reads his/her answers in a loud voice;
- h. one point is awarded to each of the 6 students who wrote an answer equal to that of the detective student.

Similarity score:

- i. after having read all the answers, the detective student identifies which group has the highest similarity score and asks him/her to flip the card;
- j. If things went as planned, the character of the detective student and the student with the highest similarity score should match.

Check for Understanding

During the “Direct Instruction & Guided Practice” section, it is important that teachers keep on asking questions throughout the activity, to make sure that students are feeling comfortable with all the new information and tasks.

Independent Practice

After this first part, the teacher can split the class into groups of 5-7 students. They can perform the same activity two or three times while the teacher moves between groups to make sure that students are doing right and to solve any problems/clarification questions.

Closing

1. This is the perfect opportunity to open up the class for a group discussion. Teachers can ask students questions that help them realize the importance of the activity/lesson with questions like, “how will you use this information in your everyday lives?”, “have you ever experienced similar situations?” or “what changes could this bring in the future?”.
2. Remember that this is not part of the final assessment, which is made at the end of each module. Instead this closing part aims to make the students critically reflect on what they have just done, making sure that they learn clearly and simply, answering any clarification questions about topics not understood.

Troubleshooting

Possible issue	Possible solution
Teachers don't have time to search for different characters to print and use in class.	We should provide a list of images ready to be printed and used in class.
Printed characters might look too similar to be properly differentiated from the similarity score.	We should choose different characters in order to simplify the process and to better differentiate their characteristics.
Teachers can't print the characters at school or they forget the printed ones at home.	Teachers can show the characters on a screen to each participant, making sure that the “detective student” does not see them before the similarity score is completed.

Resources for teachers

Dog pictures

<https://drive.google.com/drive/folders/1tSteP04VOIGvoVaCWWxQ41PyOYkM-nNR>

<https://drive.google.com/drive/folders/1YsT321qg05bwt7LpiRUcQNqwn6kYXdR5> (Material in BULGARIAN)

“Breed table” - [Breed table](#)

Completed breed table with answers for each category - [Breed categories](#)

Activity 2.1.2 - Teachable machine with Google

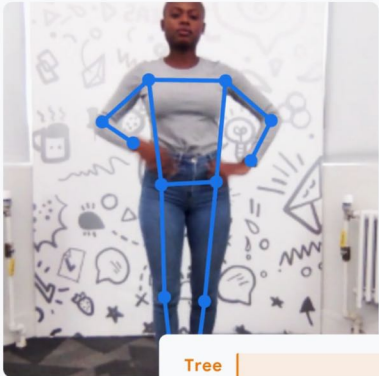
Duration	90 minutes
Requirements	Having followed Activity 1 in Module 1
Hardware and Software tools used	<i>Required:</i> a computer and an Internet connection.

Teachable Machine

Train a computer to recognize your own images, sounds, & poses.

A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.

[Get Started](#)



Tree |

Wings |

Procedure (steps)

Teachable machine is a web application to introduce AI and Machine Learning (ML) and can be used to understand how machines “learn” through a simple classification activity.

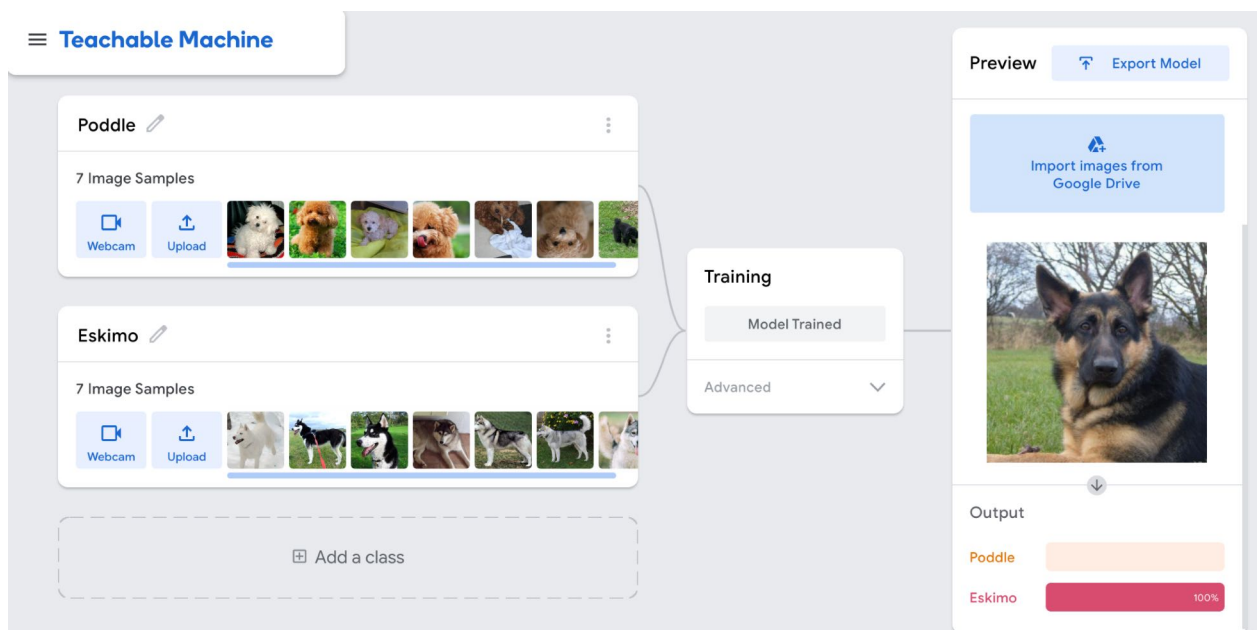
Anticipatory Set

1. Introduce students to teachable machine interface
2. It is possible also to view or use the demo material present in the tool (using for example the tutorial <https://teachablemachine.withgoogle.com/v1/>)

Direct Instruction & Guided Practice

- Assign images to classes
 - a. Give students the images from the dog breeds from the previous activity (see also resources)

- b. Access the teachable machine and create a new “Standard Image project”
 - c. Group can start with two or three groups, assigning a name for the groups and uploading the corresponding images to the different groups
- Training
 - a. The student can now train their model and testing with other images (from the same training set or from other dog breeds).
 - b. Students can now report on their results and make predictions on how the model they trained works .



Independent Practice

After this first activity that can be performed individually, the teacher can split the class into groups of 5-7 students. They can perform the same activity two or three times while the teacher moves between groups to make sure that students are doing right and to solve any problems/clarification questions.

Closing

This is the perfect opportunity to open up the class for a group discussion. Teachers can ask students questions that help them realize the importance of the activity with questions like, “how does the teachable machine work?”, “why is it called “teachable” machine?” “who is the teacher?” “how the results are influenced by the images we used for the training?”.

Troubleshooting

Possible issue	Possible solution
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The interface language for Teachable machine in english only	The activity can be performed in group and do not require to navigate the interface or read the text
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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:

- Latest version of the teachable machine <https://teachablemachine.withgoogle.com/>
- Previous version of the Teachable Machine with a tutorial <https://teachablemachine.withgoogle.com/v1/>

Presentation of Teachable Machine in BULGARIAN

<https://drive.google.com/file/d/1cB5K0Bbyo1pyi5wL6UVQcao0m4leEOXk/view?usp=sharing>

Activity 2.1.3 - Testing an AI image generator

Duration	90 minutes
Requirements	Having followed Activity 1 in Module 1
Hardware and Software tools used	<i>Required:</i> a computer and an Internet connection.
Glossary	Deeplearning, DALL-E

Procedure (steps)

Craiyon (<https://www.craiyon.com/>), is an AI model that can draw images from any text prompt that you enter. For example, if you write “a painting of a class full of students, Picasso style” the algorithm generates these images:



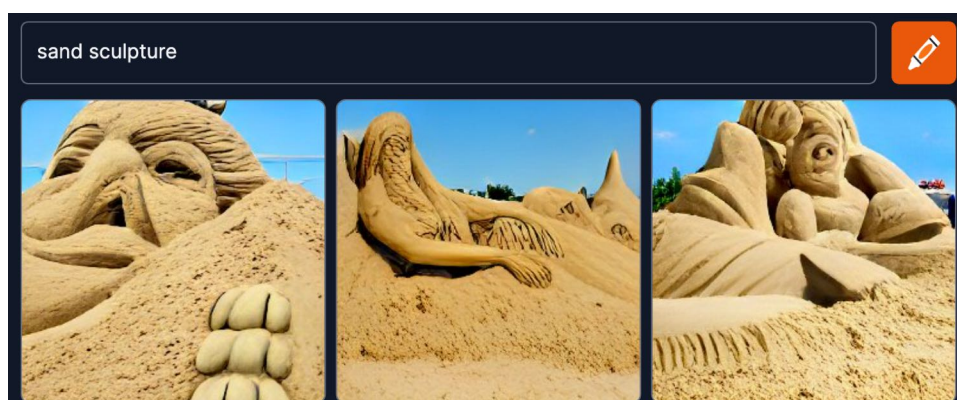
The Craiyon model is free to use for non-commercial purposes but sponsored by ads. The model is an alternative version of DALL·E mini, by the same developers and uses a version of GPT-3 modified to generate images. Basically, the model uses the semantic meaning extracted from the prompt to generate potential images. The image generation is the result of training a huge database of images and captions. Many news about DALL·E and similar machine learning models have been released in the past months discussing the potentialities and limitations of such tools (for example for manipulating images or creating deepfakes). There are also some ethical concerns with respect to the dataset used for the training and the biased representations generated by the model (for example, the reduced probability of representing women in the outputs, or of representing mostly white people). The capabilities of image generation models are impressive, but there are indeed some limitations: on the one hand, the model generates unexpected creations, but the same creations are also limited by stereotypes and bias which dominate the source of information used to train the model (this topic can be further discussed in Module 3).

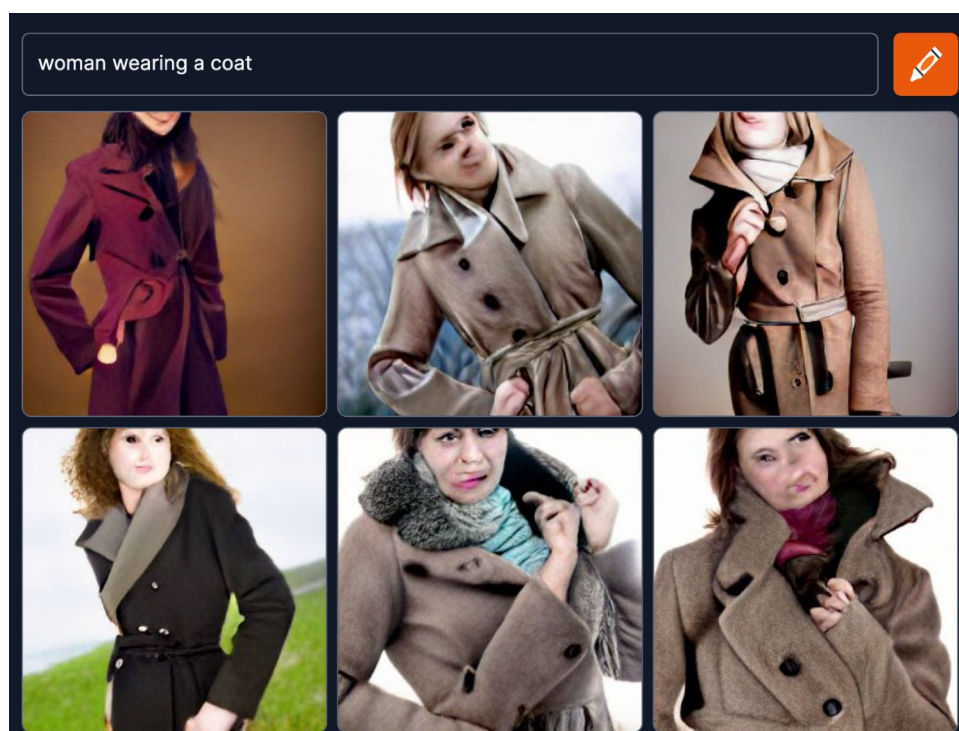
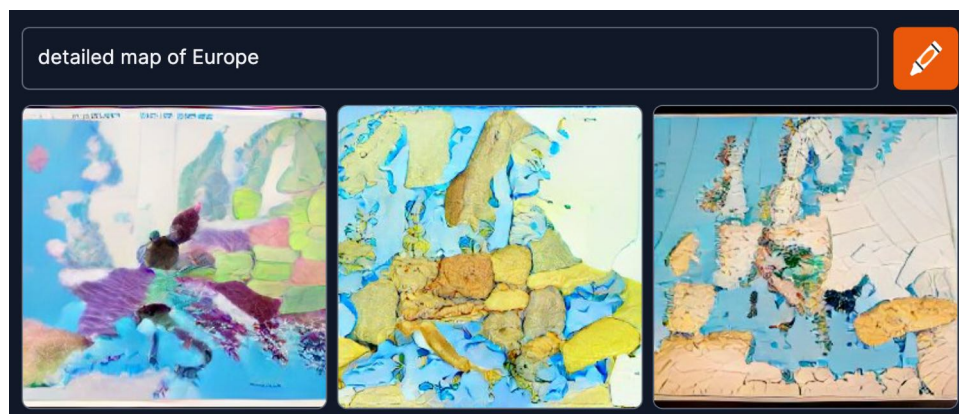
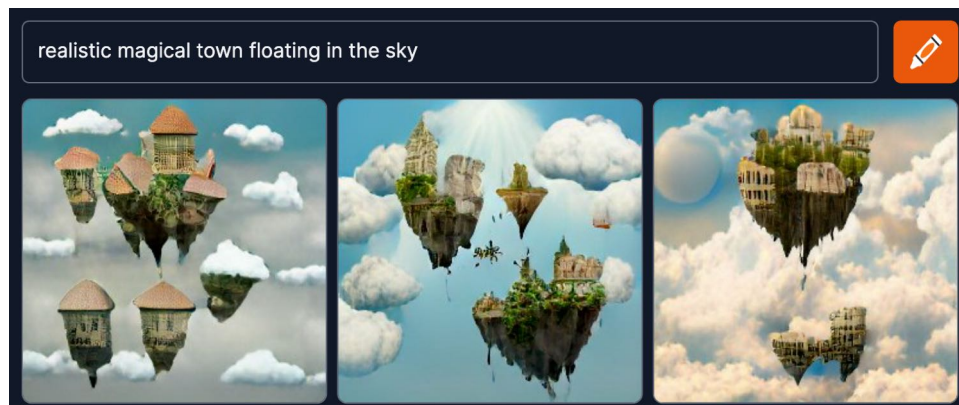
Direct Instruction & Guided Practice

Introduce students to Craiyon interface and test some prompts, for instance:

- “realistic unicorn”
- "sand sculpture"
- "pencil drawing of a school"
- “realistic magical town floating in the sky”
- “detailed map of Europe” (this prompt can be used for making the class think about the quality of the created images)
- “Woman wearing a coat” / “Man wearing a coat” (inform students that the faces recreated by the algorithm might be scaring and not realistic - see below)

The teacher should emphasise that the images created by the model are original and not copies of other images on the web - a comparison can be done by the results from a image search (such as Google Image) and the output of Craiyon.





Independent Practice

After this first activity that can be performed with the whole class, the teacher can create groups of 5-7 students. They can perform some tests with Craiyon and save the images they

created. A good indication would be to try to create a series of images having the same subject but using different graphical styles. For example:

- students can recreate the style of artists or an art style by modifying the prompt (for instance adding an artist's name generate an image that tends toward the named artist's style - e.g. "by Picasso", "by Klimt", "by Da Vinci", "futurist style", "realism", "impressionism". Also adding a title of a painting might change the image style)
- some keywords can change the graphical style of the generated images (for example adding "cartoon", "sketch", "steampunk", "horror")
- students can use the Craiyon to represent objects, places, animals, people - there might be some differences in the quality of the generated images

Closing

This is the perfect opportunity to open up the class for a group discussion. Teachers can ask students questions that help them realize the importance of the activity with questions like, "How does Craiyon work?", "Who is the Craiyon's teacher?", "How the results are influenced by the prompts we give?".

Students might also notice that celebrities or cartoon characters often come out as blobs that vaguely resemble the original, and realise that the model really cannot recreate faces very well. This is because as humans we are very good at recognizing faces and we spot any minimal misshape - while the model tries to recreate the face, it makes mistakes and we can easily spot them. The model uses the same technique for recreating other objects such as the moon, a landscape or a tree. In these cases, we do not really notice the issues and they appear accurately represented.

Troubleshooting

Possible issue	Possible solution
The prompt for the system can only be in English	The teacher can prepare some pre-made prompts to use in class. Otherwise, it might be an opportunity for involving the English teachers
The service might take some time for creating the images	Instead of focusing on creating many different images, make the students use only one prompt and then save the image and work on it
Face generated by the algorithm might be weird or scaring	The teacher should consider this aspect before using this tool in class. The teacher might also use pre-made prompts and show how the algorithm work to the class (without

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:

- Article explaining Dall-E model (that is similar to the model used by Craiyon)
<https://cv-tricks.com/how-to/dall-e-text-to-image-generation/>
- Article on the ethical concerns of AI image generators
<https://www.wired.com/story/the-joy-and-dread-of-ai-image-generators-without-limits/>
- Website containing examples and tips for prompts <https://dallery.gallery/>

Wordalle is a game that combines Wordle and DALL-E and challenge the player to guess the prompt used for generating the images using the Wordle rules. The game can combine English activities with a discussion on how AI models work.

<https://huggingface.co/spaces/huggingface-projects/wordalle>

Module Two - Topic 2

Facial recognition and basic programming concepts

Duration	120 minutes
Subjects	Facial recognition and computational thinking
Summary	This topic covers some practical exercises on the use of Scratch programming language for using some basic AI algorithms for facial recognition.

Learning objectives

Through these activities students will learn:

1. Basic concept of programming using Scratch Lab
2. Basic components for facial recognition
3. Discuss implications of facial recognition

Activities overview

Activities	Modality	Level
Activity 2.2.1 Facial recognition with Scratch Lab	In class / Online	Intermediate
Activity 2.2.2 Using conditionals in Scratch Lab	In class / Online	Advanced

Advanced level

For more advanced activities combining Scratch with machine learning, we suggest to use this website that contains many examples of applications of AI-based systems made in Scratch with different difficulties levels

<https://machinelearningforkids.co.uk/?lang=en%23!/worksheets#!/worksheets>

An other interesting platform that combine Scratch and AI is Cognimates

(<http://cognimates.me/home/>)

In their websites there are examples of Scratch code for creating a game for playing Rock, Paper, Scissors or a model that simulate how digital assistants like Alexa recognise preferences and respond to voice inputs.

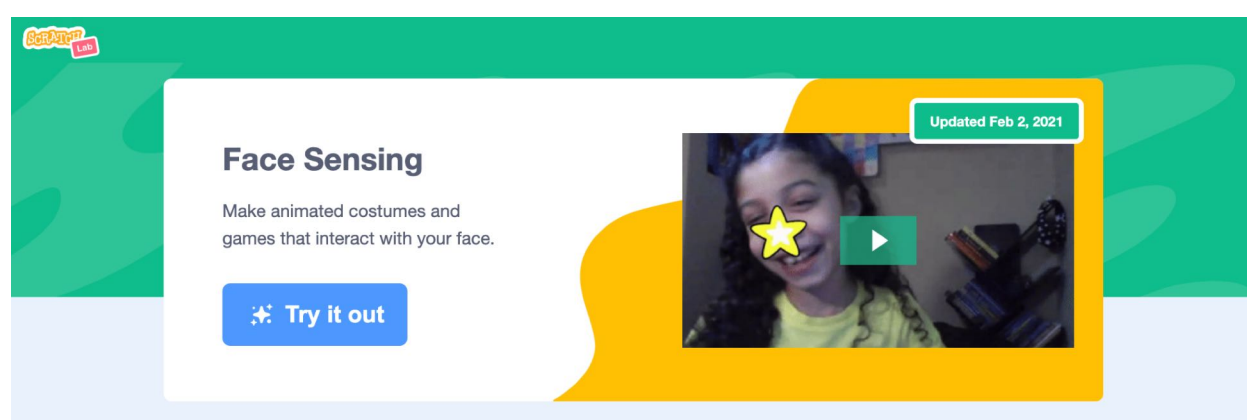
Other advanced tools for training machine learning models using Micro:Bit can be found here

<https://ml-machine.org/> or for learning AI concepts through Minecraft here

<https://minecraft.makecode.com/lessons/maze-ai-part1>

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=H4IZ-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=5ROWaxwHtaA>
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)

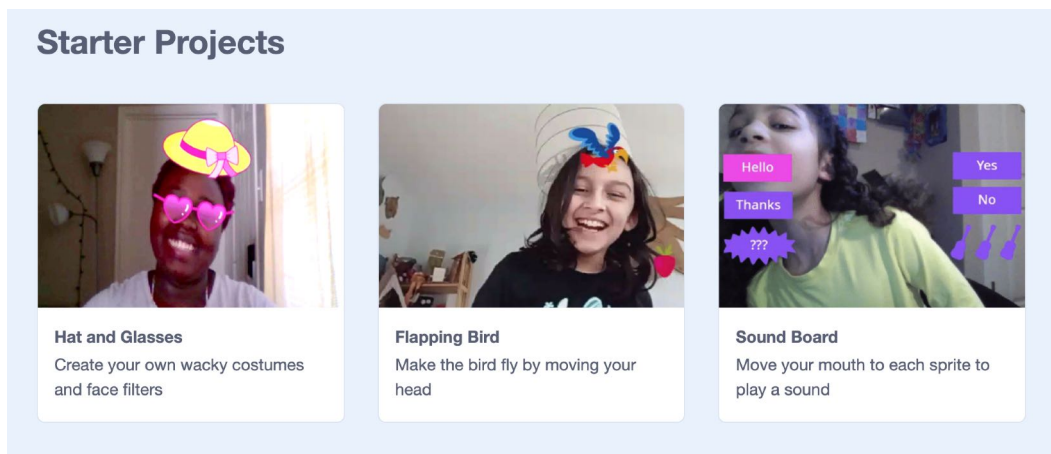
Advanced activity using Scratch Lab Face Sensing for creating a small game using the “when” and “if” components

Anticipatory Set

- Introduce students to Scratch Lab (previous work on Scratch language is recommended)
- 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. Access the template “Flapping Bird” from <https://lab.scratch.mit.edu/face/>



- b. This program creates a simple game that use when and if statements
- c. 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

- Provide some challenges to the students, E.g. :
 - Add a sound if the head touch the border of the camera area
 - Add a message if no faces are recognised in front of the camera
 - Introduce a second type of elements (e.g. a “bomb”) that the parrot should not touch

It is also possible to practice with Scratch to modify the program discussed in “Is it AI or not” activity. <https://scratch.mit.edu/projects/371119352/>

Other resources to use Scratch for creating digital games or interactive programs that simulate real-world application of AI systems can be found here

<https://machinelearningforkids.co.uk/?lang=en%23!/worksheets#!/worksheets>

Resources for combining Scratch with Teachable Machine using a script in PictoBox. The example in the link presents a project for creating a Scratch program that can recognise if the person in front of the webcam is wearing a face mask or not

<https://thetempedia.com/tutorials/making-a-mask-identifier-machine-learning-in-pictoblox/>

Assessment

At the end of each activity (lesson) during the second module, the teachers can ask for a personal deeper reflection on what students have learned thanks to the activity done. The reflection can be made in written or oral form, depending on the teacher's preference. Providing this assessment immediately after the end of a lesson will help students to remember the activity just carried out, without having to wait for the end of the module.

At the end of the whole second module, the teachers will make a brief summary of the activities and the main concepts addressed during its lessons, in order to help the students to quickly review the contents. After a room for clarification questions, students can perform a multiple choices question test and they will answer a short open question. The open question aims to let students express a personal thought, as well as a creative idea, concerned with the contents of the second module, while the multiple choices help teachers and students to have a verified overview of the topics learned. It is important that this evaluation is not judgmental but, on the contrary, gives feedback. It should not be an assessment of learning, but an assessment for learning that is: (i) integrated into the learning process, (ii) focused on understanding, (iii) explicit in purpose, (iv) positive towards the error, considered as a point of reflection; (v) a dialogue between student and professor or educator.

DigComp 2.2. area	Definition	Assessment Indicators	Details
5.2 IDENTIFYING NEEDS AND TECHNOLOGICAL RESPONSES	<i>Aware that many AI systems require a combination of AI techniques to function in real-world scenarios (e.g) a virtual agent might use natural language to process instructions and reasoning in uncertainty to make recommendations)</i>	How can we set an AI? (e.g. activity of the module)	The student shows that he has understood the process of training an AI.

3.2 INTEGRATING AND RE-ELABORATING DIGITAL CONTENT	<i>Aware that AI system can help the user to edit and process digital content (e.g. some photo editing software uses AI to automatically age face while some text applications use AI to suggest words, sentence and paragraph)</i>	In which daily activity (out of the school) you, or your family, would you use the AI tools that you learned to use in the module?	The student gives at least one example
4.1 (only advanced) PROTECTING DEVICES	<i>Weighs the benefits and risks of using biometric identification techniques (e.g. fingerprint, face images) as they can affect safety in unintended ways. If biometric information is leaked or hacked, it becomes compromised and can lead to identify fraud.</i>	What are the risks of the AI's power to use biometric identification techniques?	The student is able to explain at least one context/examples in which AI can generate security problems.
5.4 IDENTIFYING DIGITAL COMPETENCE GAPS	<i>Aware that some AI systems have been designed to support teaching and training humans (e.g. carrying out tasks and assignments in education, at work or doing sports)</i>	Based on the experiments carried out throughout the module, how AI could help you in your work in the classroom?	The student gives at least one example.

