What is what?

50-60 minutes | 9-12 years old | Difficulty: low

Description

In this session, pupils learn about artificial intelligence and how it classifies images. Afterwards, they challenge both the artificial intelligence and themselves through a board game of object identification.

Preparation

- Groups: small groups (3-5 people).
- Prepare the material needed for the activity.
- Charge the tablets before carrying out the activity.
- It is necessary to have a QR code reader installed on the tablets.

Materials

Pencils	Stationery.
Sheets of A4 paper	Stationery.
Glue stick	Stationery.
Scissors	Stationery.
Tablet	Android or iOS.
Pupil download	Downloadable with the game components. One document per group.
Pupil download	Downloadable with Gestalt figures. A document for the entire classroom.

Follow these steps

Introduction 10 minutes

We start the activity by explaining to the pupils that we are going to make a board game with artificial intelligence.

Artificial intelligence is the simulation of human intelligence by machines which allows them to perceive their environment, understand it, learn from it and act accordingly.

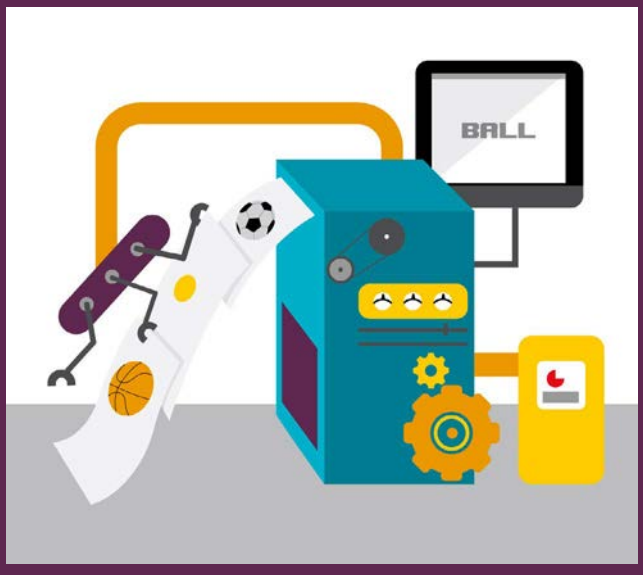
There are many types of artificial intelligence, and they can specialise in doing different tasks. This time we are going to focus on artificial intelligences designed to classify images.

This type of artificial intelligence uses machine learning techniques to learn to classify images.

Generally, artificial intelligence that recognises objects uses **machine learning**, a type of artificial intelligence that uses examples to understand the real world.

For example, we can train an artificial intelligence to recognise drawings of balls if, at the start, we show it various drawings of balls and tell it that they are balls.

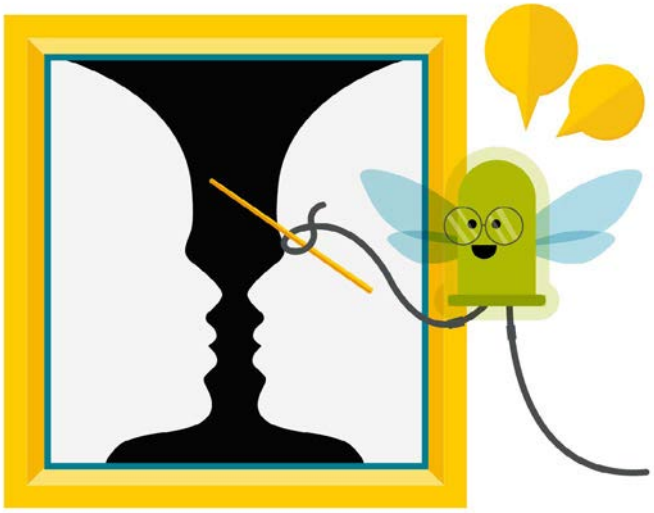
In time the artificial intelligence will identify all types of balls.



We use the downloadable with Gestalt figures to explain to the class how artificial intelligence recognises images.

We show the figures one by one and ask the pupils what they think each of them represents. After this, we ask them how they have identified it and what they have looked at to identify it.

We explain to the pupils that, like us, this type of artificial intelligence is able to identify the outline or silhouette of a figure and relate it to other similar figures that have been shown to it before.



Steps 15 minutes

We set up the groups and place every two groups at one table.

We hand out to each table:

- A downloadable document with the board, a dice and the game cards.
- Scissors.
- Glue stick.

We tell the groups that before playing we have to prepare the playing cards and the dice by cutting everything out and assembling the dice.

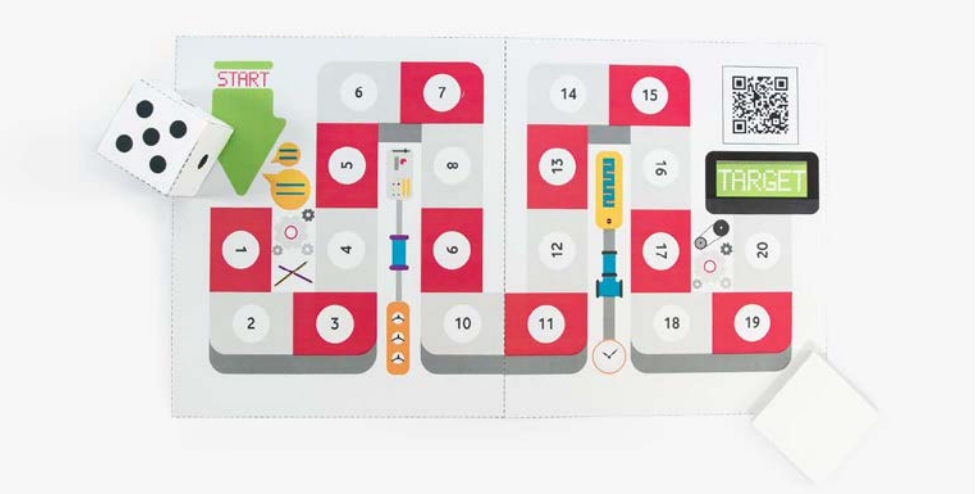
In addition, each group has to look around the classroom for a small object that can be used as a token to move around the board. For example, erasers, paper clips, chalk, etc. may be used as tokens.

Play 25 minutes

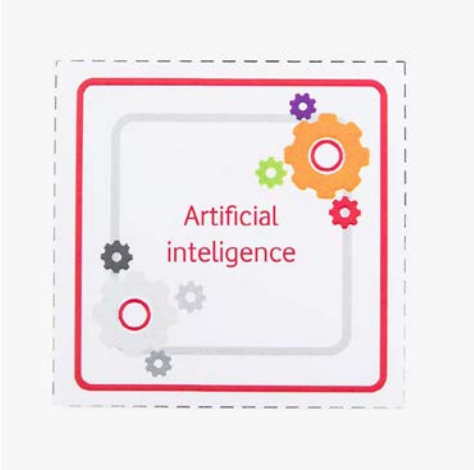
We ask each table to place the board in the centre and the cards face down to form a deck.

We hand out several sheets of paper, a pencil and a tablet for each table.

The starting team at each table rolls the dice: the number that comes up indicates the number of squares that the chip can move across the board if their team overcomes one of the challenges shown on the cards. To see which challenge they are facing, one team member picks a card from the pile without showing it to the other participants.



There are three types of challenge:



The application. In this category, the team challenges an artificial intelligence application to identify an object of its choice (that has not been used previously).

If the application identifies it correctly, the token can be moved.

The drawing. The person who has picked up the card becomes the drawer. He/she thinks of an object (not repeating words and/or concepts), tells it to the opposing team and draws it on the paper. His or her team has to guess the object.

They can move the card if they guess the object correctly in less than thirty seconds.

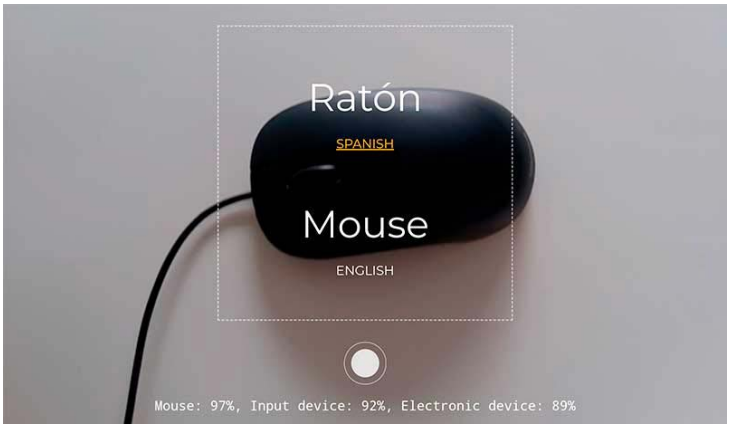
The description. The person on the team that has picked up the card has to think of an object, tell it to the other team and describe it for the rest of his/her team to guess.

They can move the card if they guess the object within thirty seconds.

On each turn, a different person from each team must pick up the card. When a team finishes its challenge, it passes the turn to the next team and places the card back on the bottom of the deck.

To access the artificial intelligence application *Thing Translator* that is required to solve the "Application" challenges, groups can use the QR code displayed on the board by using a QR code scanning application such as *Barcode Scanner* or use this **link** directly.

Once inside the web application, focus the camera on the object and press the circular button that appears at the bottom.



Conclusion 5 minutes

Finally, we analyse with the class how the artificial intelligence application has behaved, whether it has detected all the objects, what should be done to detect the ones it has failed to detect (focus the object from different perspectives, train the artificial intelligence more, improve the lighting around the object, etc.), or we discuss with the pupils whether they believe that an artificial intelligence could come to identify more objects than a human being.

Objectives and competences

Objectives

- Use the various advanced communications tools (mobile phone, chat, email) to interact with others.
- Create digital content in different formats, including multimedia (text, tables, images, audio, etc.)
- Be aware of the possibilities and limits of current technology in carrying out tasks and resolving problems.
- Be able to explore options in technology to complete non-routine tasks.
- Know how to identify technological tools to learn about various subjects.
- Know digital technology that can be useful in carrying out personal, family and educational tasks.

Digital competences

Communication and collaboration

- Interaction through digital technologies.

Creating digital content

- Developing digital content.

Problem solving

- Identifying needs and technological responses.
- Identifying digital competence gaps.

Other competences

- Ability to analyse and summarise.
- Ability to organise and plan.
- Oral and written communication.
- Problem resolution.
- Decision making.

- Working in a team.

- Interpersonal skills.

- Motivated by quality.

Recommendations

- You can establish groups or allow the pupils to choose their team members.
- If there is more time available or pupils progress more quickly than expected, they can play different rounds between the teams by changing their opponents.
- If there is less time available, we can prepare the cards and dices before the class.
- Using artificial intelligence applications can increase the temperature of the tablet. When not in active use, the application can be closed to reduce the temperature and extend the life of the tablet.