

Game Controller

1. Introduce Teachable Machine

Introduce the students to the Teachable Machine website and how they can create a **image**-project. While the website is quite easy to use, it can be necessary to show the steps of how to create a few classes, how to **record some sample images** and finally how to **train the network**.

A good first exercise for the students could be to either differentiate between persons or between facial expressions, which works well either alone or in small groups.

2. Demonstrate how to export a model

Once a model is trained, it can be exported to use in other applications. Show your students, how a model can be downloaded as a zip-file using the **export model button**. This is different to exporting the whole project, as it only includes the trained network and not the image data.

3. Introduce Snake

To see ones model in action, the Snake game on the website snake.c4f.wtf can be used. It allows users to upload a **zip**-file (no unpacking required) of a model and use it to control the direction of the snake. For a model to be used, it **has to** be an **image**-model and include the classes **up, down, left, right** and **none**, otherwise an error will be shown. Then the game can be controlled by whatever the training set was (for instance: hand gestures, facial expressions, ...).

4. Let the students experiment

Let the students create their own control model and test it on the website. They will probably have to adapt it multiple times, until it works as expected.






5. Switch models

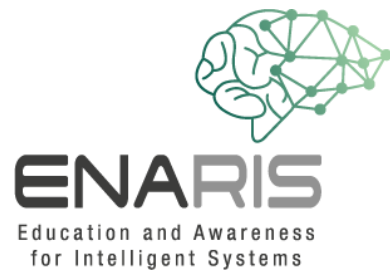
Let the students **share** their model with other teams and test how well they work in this different environment. Does it still work?

6. Optimize the model

Finally the students can try to make their model **more general**, by increasing the variety in their training data. With some students a small competition works well, where the students are rewarded points for each person whose input is recognized.

7. Material

-  <https://teachablemachine.withgoogle.com>
-  <https://youtu.be/DFBbSTvtpy4> (record)
-  <https://youtu.be/CO67EQ0ZWgA> (train)
-  <https://youtu.be/n-zeeRLBgd0> (export)
-  <https://snake.c4f.wtf>



EUROPEAN UNION

