

## IO3 – School Program for Primary Education Students

### Advanced Learning Activity Digital Content Creation



## Questions/Problems for each topic

Topic	Question/Problem*
Information and Media literacy	<i>Can AI help you in your search for information for your science paper?</i>
Communication and Collaboration	<i>Do you think Google might be able to order your favorite pizza?</i>
Content Creation	<i>Can a machine learn to recognize images and play with you?</i>
Responsible Use	<i>What do you think is the dark side of AI?</i>
Problem Solving	<i>Why does the mobile phone unlock with my face?</i>

## Learning activities

Use this template to design and develop the two Learning Activities.

<b>Question/Problem</b>	Computer can see us. What can we do with it? Can we teach it to recognize images? Can a machine recognize our eyes, our nose, and our mouth?
<b>Level (Basic/Advanced)</b>	Advanced
<b>Introduction</b>	

We will see two activities, one is focus on images, the other on video. In the first one we will teach the computer to play rock paper scissors with us we will train it to recognize our moves via camera. In the second activity we will see how we can create a filter or mask for our face in the video.

## Process

Activity: Rock-Paper-Scissors

1. You can play a game of rock paper scissors against AI.  
<https://next.rockpaperscissors.ai/>
2. Now we will use Scratch and we will create a program of our own to play against the computer.
3. First we have to login/sign up in a platform to help us train a computer program.  
<https://machinelearningforkids.co.uk/?lang=en#!/login>
4. Now we can go to our project and create a new project that recognize images.
5. First step is to create a training set for our program. We will create 3 different labels/sets one for each of the rock, paper, scissors. We will take photos via the webcam in different angles for each option and different distances (better with a neutral background like the ceiling). Take notice to take same number of pictures of each option (at least 15) but the more pictures the better the training will be.
6. Now we have our training data set it is time to train the program or model as we would say.

7. Now we have trained blocks that our program will recognize
8. Lets go to our code  
<https://machinelearningforkids.co.uk/scratch3/>
9. We go in the project templates and select rock paper scissors
10. In the sprite You (it is about our move) we put the trained blocks we created.
11. Now we can play press the green flag to start and then the key P to take a pic of your move.

Activity: Create a filter or mask for our face in the video

- A. We will now move in a new activity using scratch.  
<https://machinelearningforkids.co.uk/scratch3/>
- B. You can load a demo program you can find in [this](#) file.
- C. You have to allow access to your webcam after that press the green flag and you can play with the program. If left mouse click is pressed a new face appears. If space bar is pressed some features expand.
- D. Now you can go into a sprite and change its costume create your own (hint sprites are centered in both eyes nose and mouth by painting in the edges you can create eyebrows or beard or ears etc).
- E. Try to see your changes.
- F. You can even modify the code to add even more sprites you can either draw or even load a picture.

## Final activity

We propose, as a reflection activity, a discussion about of the questions that may be posed, such us:

- Q:** Did you see any differences in the two rock paper scissors games? Which opponent was more difficult and why?  
**A:** Our game is easier to win. The longer we play with the <https://next.rockpaperscissors.ai/> the harder it gets to win. Our game is based on total random chance we only teach computer to recognize our moves not our pattern.
- Q:** What other games can we train computer to play?  
**A:** There are lot of options even elaborate games like hide and sick or Pac man you can see some in [here](#) project templates to get some ideas
- Q:** What other hand gestures is useful to teach Artificial Intelligence to recognize?  
**A:** Sing language is an interesting option with many possible applications
- Q:** What other filters can we create?  
**A:** Our imagination is the limit popular cartoon characters our own creations
- Q:** Where is useful for Artificial Intelligence to see facial features?  
**A:** Airport security or face lock in phones and laptops are couple of examples