

SHEDDING LIGHT ON A PICASSO!

Worksheet #2

Activity 1: Checking the authenticity of a painting

In the world of art collecting, the works of Pablo Picasso hold a revered place. However, this prominence has given rise to a plethora of forgeries. Detecting a fake Picasso is crucial for collectors aiming to make an informed investment.

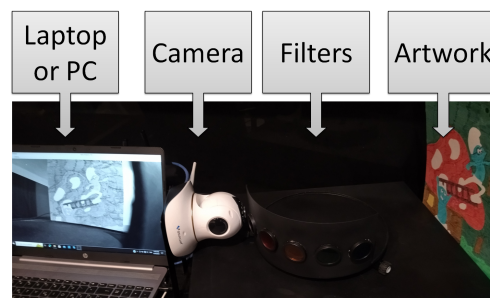
Could you think of a non-invasive way to check the authenticity of a painting?

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Activity 2: Get familiar with the set-up

Select a painting of yours and use the following set-up:



Follow the procedure described below for each filter:

- put a white surface (e.g. photographic paper) in front of your artwork, take the image *W* and save it,
- remove the white surface,
- keep all settings unchanged, take the spectral image *A* of the painting and save it,
- create total darkness in the room, take image *B* and save it.

The black image will be used to remove noise from the spectral and white images. The white image will be used to normalize the spectral image. All images are initially converted to black and white (greyscale).

*Intensity normalization is performed independently for each filter *i* but also for each pixel *x*, according to the equation:*

$$I_i(x) = \frac{Q_i(x) - B_i(x)}{W_i(x) - B_i(x)}$$

Activity 3: Get familiar with ImageJ

Open the free software **ImageJ** (<https://imagej.net/ij/index.html>).

Follow steps 1 to 5, as described here:

<https://sites.google.com/view/scienceonstage2024/intensity-normalization>

Activity 4: Graph of Intensity

Follow steps 1 to 6, as described here:

<https://sites.google.com/view/scienceonstage2024/graph-of-intensity>

Activity 5: Again back to the initial question!

How could you check the authenticity of a painting?

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