

Exercise: Object detection

1. Learning goal

For this exercise the goal is that you collect some first experiences with detecting an object under different lighting conditions. Another side goal is that you shall build up more programming knowledge with OpenCV.

2. Record or download a video

For the sake of simplicity we will assume that the object that has to be detected in individual camera frames has a different color than all other objects present in the camera frames. E.g., assume that you want to detect a yellow tennis ball and there are not many other “yellow” pixels.

Record an own video where you show such an object into a webcam or download the following test video:

Download location #1 (YouTube):

<https://www.youtube.com/watch?v=4Sj23uKIICo>

Download location #2 (my website):

http://www.juergenbrauer.org/teaching/multimodal_sensor_systems/exercises/tennis_ball_green_tshirt.mp4

3. Write an object detector

Write an object detector that allows you to detect the tennis ball (or the object shown in your video) using some of the rich functionality of OpenCV. Search in the web and/or think about how you can speed up your detection code such that your detection algorithm achieves a high frame rate.

Here is an example video of what the output of your (tennis ball or whatever) detection algorithm could look like:

<https://www.youtube.com/watch?v=p-J3vu5k-U4>