**Assignment 2: Learning about OpenCV + Object Tracking**

This week’s assignment will be to read three useful articles or tutorials for OpenCV and object tracking using OpenCV. You can also follow along with any code provided in the tutorials, but it’s not required.

**The purpose is to:**

1. Get an overview of common and fundamental OpenCV image processing functions

2. Get introduced to OpenCV’s in-built object tracking algorithms, and their general pros/cons

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**Reading 1:**[*OpenCV Tutorial: A Guide to Learn OpenCV*](https://www.pyimagesearch.com/2018/07/19/opencv-tutorial-a-guide-to-learn-opencv/)by Adrian Rosebrock

**Objective:** Get an idea of what basic functions and image editing operations are available. The goal is not to memorize or know how to code all of these, but just to get a feel for the kind of tools we have and what they can do.

**Reading requirement:**

Start: *Loading and displaying an image* section

Stop before: *Running the first OpenCV tutorial Python script*

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**Reading 2:**[*16 OpenCV Functions to Start your Computer Vision journey (with Python code)*](https://www.analyticsvidhya.com/blog/2019/03/opencv-functions-computer-vision-python/)by Saurabh Pal

**Objective:** Learn about some other common functions that the other article didn’t cover.

**Reading requirement:**

Read or skim the following sections.

*Changing Color Spaces*1

*Image Translation*

*Simple Image Thresholding*2

*Edge Detection*

**Additional comments:**

1This is useful for converting image pixel color data formats, e.g. HSV (hue, saturation, value) to RGB (red, green, blue).

2Sometimes we want to filter out or select certain pixel values in an image to make detection or tracking algorithms work better. For example, if we are looking for black cracks on a lighter colored wall, we could extract the pixels corresponding to cracks by applying a threshold value that rejects pixels lighter than a certain value.

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**Reading 3:**[*Object Tracking using OpenCV (C++/Python)*](https://www.learnopencv.com/object-tracking-using-opencv-cpp-python/#opencv-tracking-api)by Satyah Mallick

**Objective:** Learn about tracking algorithms available in OpenCV.

**Reading requirement:**

Watch the short video under *OpenCV Object Tracker Demo*.

Read *What is Object Tracking?* to learn about types of tracking algorithms.

Read *Object Tracking Algorithms* but don’t read the individual algorithm subsections.

Read just the pros and cons of the individual algorithms.

**Additional comments:**

Another optional article about tracking algorithms, but more geared toward implementation:

[OpenCV Object Tracking](https://www.pyimagesearch.com/2018/07/30/opencv-object-tracking/) by Adrian Rosebrock.