**CS 763/CS 764: Task 02a**

Your Zoom background image

- Announced 22/01. Due 27/01 23:29

- Please write (only if true) the honor code. You can find the honor code on the web page. If you used any source (person or thing) explicitly state it.
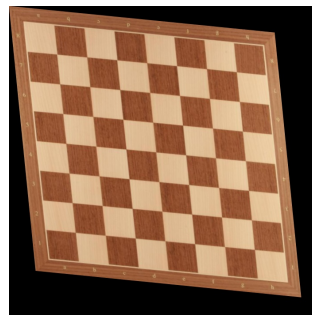
- **This is NOT an individual assignment**

1 Overview

In the lectures, we saw how an app such as Camscanner or Adobe Scan or Dropbox 'undistorts' an image. In task02b, we go the other way. Here we lay the ground work.
Please perform the steps below in order.
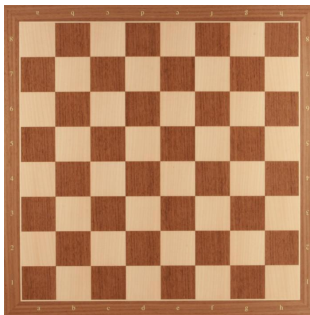
(a) Original Chessboard

(b) Distorted Chessboard

(c) Black And White Chessboard

1. Using opencv (`cv2.warpAffine()`) reconstruct Fig. 1a ("undistort") (size 600x600) from the provided distorted chessboard image (`distorted.jpg`) (Fig. 1b). It is to be assumed that this distortion is a planar axial shear distortion.

   In this part you need to construct the affine transformation matrix by yourself "manually" (e.g., using a ruler) and feed it to the API. (Take a look into the documentation to get an idea about the format of the matrix).

2. Now perform the "un-distortion" again, using the API **cv2.getAffineTransform()**.

3. Now try the same task with the same API, but for Fig. 1c.

Questions.

1. For (1), explain in a paragraph how you did the undistortion. (A trial-and-error brute force method is not expected.)

2. Are there any difference in the outputs in case (1) (manual) and (2) (using the API).

3. List the point correspondences you used for (2)

4. Document your observations for (3), ideally with a picture.

Run Examples

- Manually computed affine tansformation: `python3 affine-trans.py -mat manual`

- API computed affine tansformation: `python3 affine-trans.py -mat api`

Submission Guidelines

Submission guidelines generally remain the same except that you will merge Task02a with Task02b.