German International University of Applied Sciences
Informatics and Computer Science
Dr. Caroline Sabty
TA. Mariam Sadek

Introduction to Media Informatics, Spring 2023
Assignment 2

Submission: Thursday 11 May, 11:59 PM

Submission guidelines:

a) Every team should submit to the following email: **incs409.2023@gmail.com**

b) **The subject** should be A2_T[xx]_Team[xx] Ex. : A2_T1_Team[03]. You **MUST** stick to your tutorial number and team number in the sheet uploaded on CMS.

c) The submission email should contain one zip file named as the subject.

d) Your zip file should contain:
1. Your python code (.ipynb)
2. A folder named AvgFilter_ImgSeq
3. A folder named PixelTranform_ImgSeq

Good luck! :)

Video Filtering and Tranformation :

Given a noisy video, you are required to read and filter the video frames using 3x3 Average Filter.

a) The Average Filter kernel

$$\frac{1}{9}\begin{bmatrix}1 & 1 & 1\\ 1 & 1 & 1\\ 1 & 1 & 1\end{bmatrix}$$

Save the first 10 filtered frames using average filter in a folder named 'AvgFilter_ImgSeq'.
You can use the cv2.VideoCapture function to read the video file.

b) Pixel Point Processing Tranformation

$$P' = f(p) = \begin{cases} 1/100(205p+5000), & \text{if } p<=100 \\ 255, & \text{if } p>100 \end{cases}$$

After saving the first 10 filtered images, you have to apply pixel point transformation on them using the aforementioned equation, where f() is a grey level transformation function, P' is the processed image pixel value and p refers to the original image pixel value.

Save the 10 transformed frames in a folder named 'PixelTranform_ImgSeq'.