# **CVI620 – Assignment 1**

# **Capturing Video**

| Total Mark: | 15 marks (15% of the total course grade) |
| --- | --- |
| Submission file(s): | * Assignment01.py / Assignment01.ipynb * Assignment01.docx (this document with your answers) |

Please work in **groups** to complete this Assignment. This Assignment is worth 15% of the total course grade and will be evaluated through your written submission, as well as the Assignment demo. During the lab demo, group members are *randomly* selected to explain the submitted solution. Group members who are not present during the Assignment demo will lose the demo mark.

Please submit the submission file(s) through Learn@Seneca. ALL team members must submit the FINAL work.

***Please paste the resulting images and answers in this document.***

## **Part I: A photo booth application**

For this lab, you need a webcam, or a digital camera connected and installed on your machine.

1. Open **Anaconda Navigator**, then on Home tab, choose **any**  environment.
2. Launch PyCharm, Visual Studio Code, or Jupyter Notebook, whichever environment you would like to use, from ocv/socv environment. Create **assignment01.py** or **assignment01.ipynb** file.
3. Write code to capture and show the video stream from your webcam (or camera).

* Save the snapshot. Use image names such as ‘image1.jpg’, ‘image2.jpg’, etc., automatically incrementing the filename counter. Paste one of your snapshots here:

## **Part II: Image Arithmetic**

1. Brightness & Contrast:
2. Open a color image and display. Paste a sample here.
3. Increase the brightness by adding a constant (e.g., 150) to all color channels of the image. Display in a separate window. Paste the result here.
4. Change the contrast by multiplying the image by a constant (e.g., 0.5). Display in a separate window. Paste the result here.
5. Linear blend:
6. Open a second images and display. Resize the second image to match the first, if needed. Paste the second image here.
7. Ask the user for a number (alpha) between 0 and 1.
8. Implement a linear blend of the two images:

blend = (1 - alpha) \* img1 + alpha \* img2;

Display the result. Paste the result here.

**Part III: A Drawing Application**

* 1. Create a program to draw green rectangles on a image with thickness is 4.
  2. Change thickness to -1. What do you notice? Explain.

1.3 Create a program to Text On Rectangle on Image

Display the result. Paste a sample here.

## **Part IV: Group work**

Add this declaration to your file:

We, ------------ (mention assigned group number and your names), declare that the attached assignment is our own work in accordance with the Seneca Academic Policy. We have not copied any part of this assignment, manually or electronically, from any other source including web sites, unless specified as references. We have not distributed our work to other students.

Specify what each member has done towards the completion of this work:

|  | Name | Task(s) |
| --- | --- | --- |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |