# ICE3111 – Computer Vision – Lab 5 – questionnaire

* Deadline: 10/11/2022 at 23:59
* Worth 60% of Assignment 1
* Your name: \_\_\_\_\_\_\_\_\_\_\_\_\_
* Your user ID: \_\_\_\_\_\_\_\_\_\_\_\_\_

**NOTE: When you add a listing in a report, you must format it properly!** - Use a monotype font so that it is easily readable (e.g. Lucida Sans Console or Courier New). This means that all letters take up the same space on the page; - Indent the code; and - Use (colour) syntax highlighting. - Show line numbers (optional)

**NOTE: I want you to provide the command line arguments to show the effects of various parameters, e.g. changing the radius of Gaussian filter, or the alpha value of the image sharpening method.**

# 1. Gaussian filtering

## A bit of theory

* Is a Gaussian filter a point operator? [1 mark]
  + YES/NO
* Is a Gaussian filter a linear filter? [1 mark]
  + YES/NO
* Is a Gaussian filter a convolution filter? [1 mark]
  + YES/NO
* Explain in your own terms the main difference(s) between a point operator and a convolution filter. [3 marks]

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Filter the greyscale image with a fixed kernel radius [4 marks]

Include here an evidence of testing, e.g. filtering two different images

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

## Update the command line

* Include here evidence of testing an image with various filter radius [9 marks]
  + Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Add your source code below [20 marks]
  + Make sure the code is commented to explain what it is doing.
  + **DO NOT FORGET TO ADD A PREAMBLE** [1 mark].

# 2. Image sharpening

## Fixed filter\_radius and alpha values

* Step 13 of Lab script: include evidence of testing, e.g. sharpening two different images. Use the default value of filter\_radius and alpha.

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

## Varying combinations of filter\_radius and alpha values

* Step 14 of Lab script: include evidence of testing, e.g. sharpening an image with different combination of filter\_radius and alpha. [12 marks]
* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Command line used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

| Original image | Filtered image |
| --- | --- |
| REPLACE WITH YOUR OWN IMAGE | REPLACE WITH YOUR OWN IMAGE |

* Add your source code below **(even if you did not complete Step 14)** [25 marks]
  + Make sure the code is commented to explain what it is doing.
  + **DO NOT FORGET TO ADD A PREAMBLE** [1 mark].