# ICE3111 – Computer Vision – Lab 5 – questionnaire

(worth 60% of Assignment 1)

Deadline: 10/11/2021 at 23:59

* 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].