**Digital Image Processing Laboratory**

**Image Restoration**

**Alexandre Olive Pellicer**

1. Minimum Mean Square Error (MMSE) Linear Filters
   1. Hand in the four original images *img14g.tif, img14bl.tif, img14gn.tif and img14sp.tif*

![A young child with painted face

Description automatically generated]()

Fig 1: img14g.tif

A young child with painted face

Description automatically generated

Fig 2: img14bl.tif

A young child with sun drawn on her face

Description automatically generated

Fig 3: img14gn.tif

A young child with painted face

Description automatically generated

Fig 4: img14sp.tif

* 1. Hand in the output of the optimal filtering for the blurred image and the two noisy images

A young child with painted face

Description automatically generated

Fig 5: Blurred version image after optimal filtering

A young child with painted face

Description automatically generated

Fig 6: GN noise image after optimal filtering

A young child with painted face

Description automatically generated

Fig 7: SP noise image after optimal filtering

* 1. Hand the MMSE filters that you computed for the blurred image and the two noisy images. (Each filter is specified by the optimum value of that you calculated.) Orient each filter into a 7x7 array to make the spatial orientation clear. For each filter, clearly state which corrupted image was used to compute the filter coefficients,

|  |  |
| --- | --- |
| A graph of a number of squares  Description automatically generated | A black background with numbers  Description automatically generated |

Fig 8: Optimal filter for the blurred version image

|  |  |
| --- | --- |
|  |  |

Fig 9: Optimal filter for the GN noise image

|  |  |
| --- | --- |
|  |  |

Fig 10: Optimal filter for the SP noise image

1. Weighted Median Filtering
   1. Hand in your results of median filtering

![A young child with a painted face

Description automatically generated]()

Fig 11: GN noise image after median filtering

![A young child with painted face

Description automatically generated]()

Fig 12: SP noise image after median filtering

* 1. Hand in your C code

*Find it in the next page*

A screen shot of a computer program

Description automatically generated

A screen shot of a computer program

Description automatically generated