**Lab 07**

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| Student ID: | B08611027 |
| Total Score: |  |

**Note:**

Most of the explanations in this lab is mandatory, However, giving reasonable explanations to your answer or programs will earn you partial credits when your answer is incorrect.

1. **Filters and Convolution (25 points, 5 points each question)**

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| # |  | Description | Score |
| a |  | 由圖可看出此filter可以過濾出水平線 |  |
| b |  | 由圖可看出此filter可以過濾出45°的線 |  |
| c |  | 拉普拉斯濾波器，強調的是影像中灰度的突變 |  |
| d |  | Vertical Sobel filter，可以過濾出垂直的線 |  |
| e |  | 1.透過這個濾波器，45°跟135°的線會被過濾掉  2.水平的線會變清楚  3.垂直的線會變不清楚 |  |

1. **Denoising a Picture (15 points)**

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| # | Description | Score |
| - | 有參考以下網址：  <https://www.twblogs.net/a/5d5f0f93bd9eee5327fde3f2>    連續做三次filter    A~D是做total variation filter, wavelet filter and gaussian filter三取二，而看起來是B效果最好。  F~G是對B做銳化，G的結果看起來最好。 |  |

1. **Properties of Convolution (20 points)**

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| # | Description | Score |
| 1 |  |  |
| 2 | The **median filter** is the one type of nonlinear filters. It is very effective at removing impulse noise, the “salt and pepper” noise, in the image. |  |

1. **Image Segmentation and Color Space (20 points)**

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| # | Description |  | Score |
| - |  | HSV找出黃色的部分 |  |

1. **Document Scanner (20 points)**

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