**Computer Vision HW1 Report**

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**Part 1.**

* **Visualize the DoG images of 1.png.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | DoG Image (threshold = 5) |  | DoG Image (threshold = 5) |
| DoG1-1.png |  | DoG2-1.png |  |
| DoG1-2.png |  | DoG2-2.png |  |
| DoG1-3.png |  | DoG2-3.png |  |
| DoG1-4.png |  | DoG2-4.png |  |

* **Use three thresholds (1,2,3) on 2.png and describe the difference.**

|  |  |
| --- | --- |
| Threshold | Image with detected keypoints on 2.png |
| 2 |  |
| 5 |  |
| 7 |  |

(describe the difference)

When the threshold number grow up, keypoints number will decrease. In other words, the larger threshold will gain more important features.

**Part 2.**

* **Report the cost for each filtered image.**

|  |  |
| --- | --- |
| Gray Scale Setting | Cost (1.png) |
| cv2.COLOR\_BGR2GRAY |  |
| R\*0.0+G\*0.0+B\*1.0 |  |
| R\*0.0+G\*1.0+B\*0.0 |  |
| R\*0.1+G\*0.0+B\*0.9 |  |
| R\*0.1+G\*0.4+B\*0.5 |  |
| R\*0.8+G\*0.2+B\*0.0 |  |

|  |  |
| --- | --- |
| Gray Scale Setting | Cost (2.png) |
| cv2.COLOR\_BGR2GRAY |  |
| R\*0.1+G\*0.0+B\*0.9 |  |
| R\*0.2+G\*0.0+B\*0.8 |  |
| R\*0.2+G\*0.8+B\*0.0 |  |
| R\*0.4+G\*0.0+B\*0.6 |  |
| R\*1.0+G\*0.0+B\*0.0 |  |

* **Show original RGB image / two filtered RGB images and two grayscale images with highest and lowest cost.**

|  |  |  |
| --- | --- | --- |
| Original RGB image (1.png) | Filtered RGB image and Grayscale image of  Highest cost | Filtered RGB image and Grayscale image of  Lowest cost |
|  |  |  |
|  |  |  |

(Describe the difference between those two grayscale images)

|  |  |  |
| --- | --- | --- |
| Original RGB image (2.png) | Filtered RGB image and Grayscale image of  Highest cost | Filtered RGB image and Grayscale image of  Lowest cost |
|  |  |  |
|  |  |  |

(Describe the difference between those two grayscale images)

* **Describe how to speed up the implementation of bilateral filter.**