**ICV homework #2**

**2016.04.13**

**2016-20862 고병건**

**1. Guided Filter**

**- Denoised image by gray image**

|  |  |  |
| --- | --- | --- |
|  | **Original** | **Denoised** |
| **Afghan1** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_afghan1.jpg** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\afghan1.jpg |
| **Afghan2** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_afghan2.jpg** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\afghan2.jpg |
| **Monkey1** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey1.jpg** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\monkey1.jpg |
| **Monkey2** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey2.jpg** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\monkey2.jpg |

**- Denoise for multi-channel input**

|  |  |  |
| --- | --- | --- |
|  | **Original** | **Denoised** |
| **Afghan1** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_afghan1.jpg** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\mc_afghan2.jpg** |
| **Afghan2** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_afghan2.jpg** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\mc_afghan1.jpg** |
| **Monkey1** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey1.jpg** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\mc_monkey2.jpg** |
| **Monkey2** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey2.jpg** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\mc_monkey1.jpg** |

**- Denoised images with different parameters**

|  |  |
| --- | --- |
| **Sigma = 0.5** | **Sigma = 1.0** |
| **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\afghan2.jpg** |  |

**- PSNR and Running Time**

**- running time : about 31msec for afghan, 11 msec for monkey**

**- PSNR : 29.7**

**2. Weighted Median Filter**

**- Changes according to r, filters**

|  |  |  |
| --- | --- | --- |
|  | **Box filter** | **Guided Filter** |
| **input image** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey2.jpg | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\org_monkey2.jpg** |
| **R = 2** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\box_r2.jpg** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\guided_r2.jpg** |
| **R = 4** | **C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\box_r4.jpg** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\guided_r4.jpg |
| **R = 8** | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\box_r8.jpg | C:\Users\jack\AppData\Local\Microsoft\Windows\INetCache\Content.Word\guided_r8.jpg |

**- PSNR & Running Time**

- PSNR = -44.1

- Running Time = 5.06 seconds for monkey image with Guided Filter