Pixel Operation

이진영

Subtraction(Difference)

- Generally for image difference/error check

Y from YCbCr

I from HSI

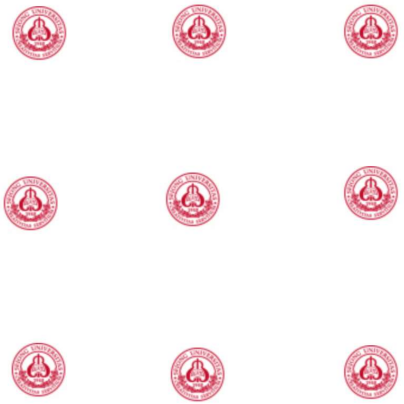
Difference = $(Y - I)^2$

```
Diff_Y = (inputImg1[j * stride + 3 * i + 2] - inputImg2[j * stride + 3 * i + 2]) * (inputImg1[j * stride + 3 * i + 2] - inputImg2[j * stride + 3 * i + 2]);
```

Mean Squared Error = $(\text{Original} - \text{Output})^2$ / #Pixels

Addition(Embedding)

- Similar to a watermark



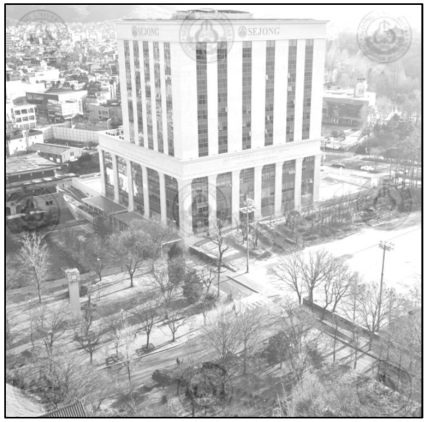
```
Y1 = 0.299 * inputImg1[j * stride + 3 * i + 2] + 0.587 * inputImg1[j * stride + 3 * i + 1] + 0.114 * inputImg1[j * stride + 3 * i + 0];
Y2 = 0.299 * inputImg2[j * stride + 3 * i + 2] + 0.587 * inputImg2[j * stride + 3 * i + 1] + 0.114 * inputImg2[j * stride + 3 * i + 0];
Y = Y1 / a + Y2 / b;
```

Ratio

```
scanf("%lf %lf", &a, &b);
```

1, 1

1, 2



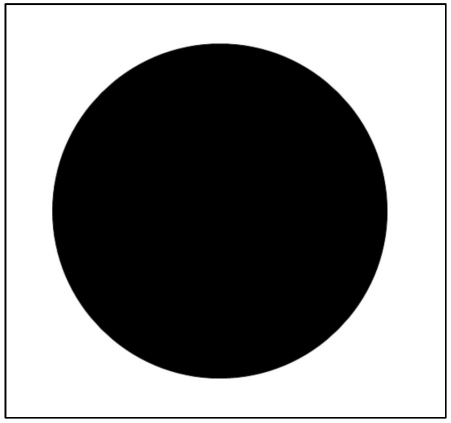
1, 4

{1, 1}; {2, 2}; {3, 3}; … {1, 2}, {2, 4} …

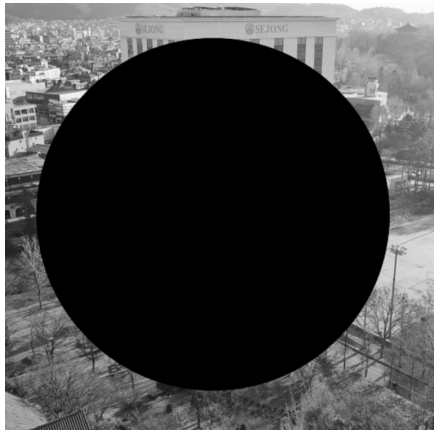
Exhaustive Tests

Multiplication(Filtering)

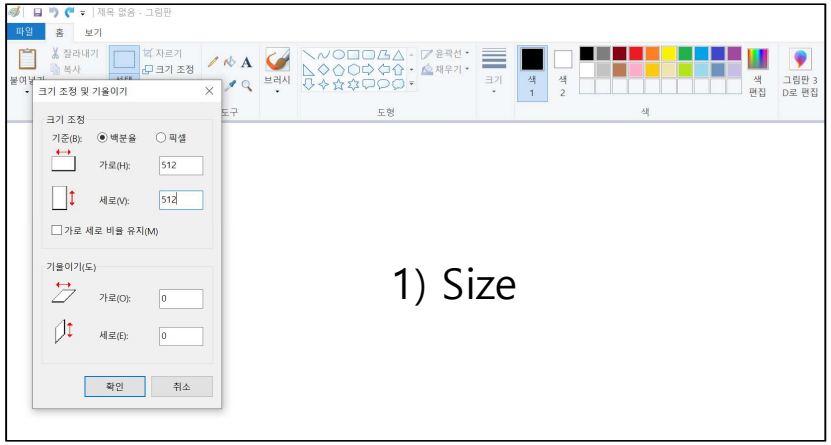
- Filtering on whole image or specific regions



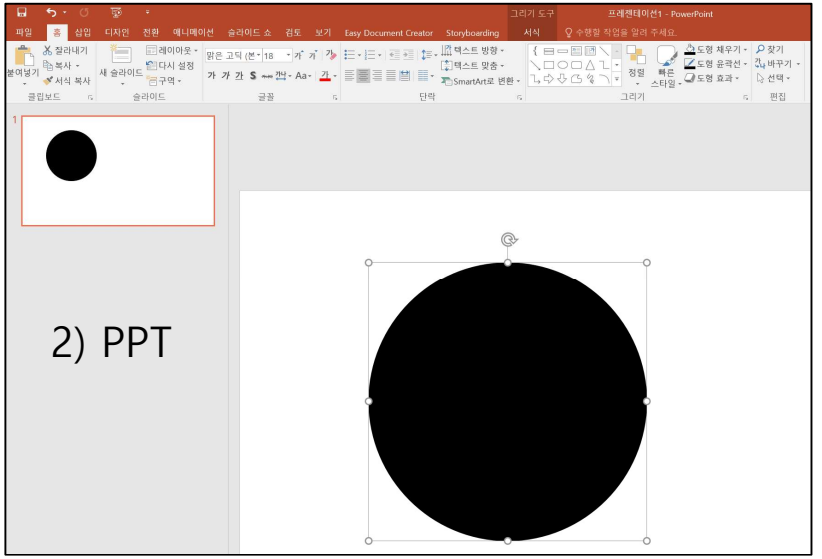
Binary Mask



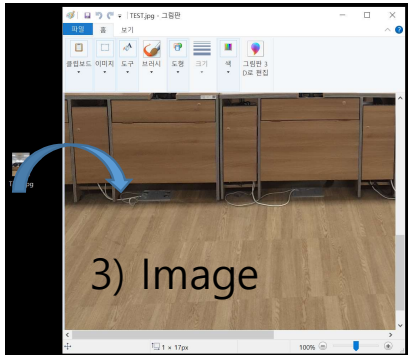
Experiment



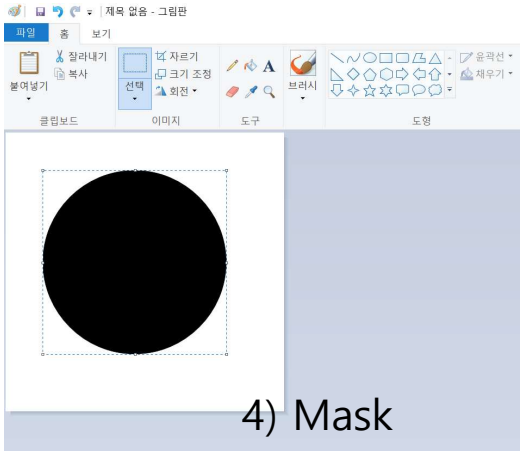
1) Size



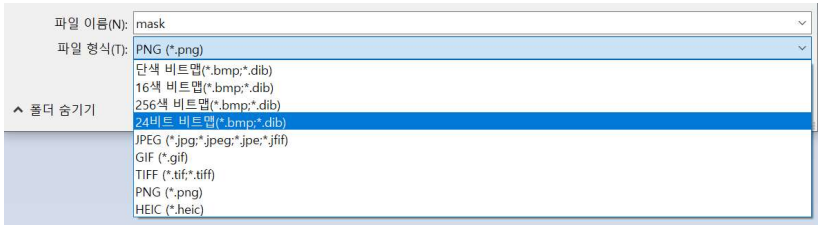
2) PPT



3) Image



4) Mask



5) BMP