EE5175:IMAGE SIGNAL PROCESSING

# LAB-5

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EE20S049

**1.Space-variant Blurring Now assume the blur to be space-variant, i.e. the standard deviation varies for each pixel. Consider the distribution of σ to be**

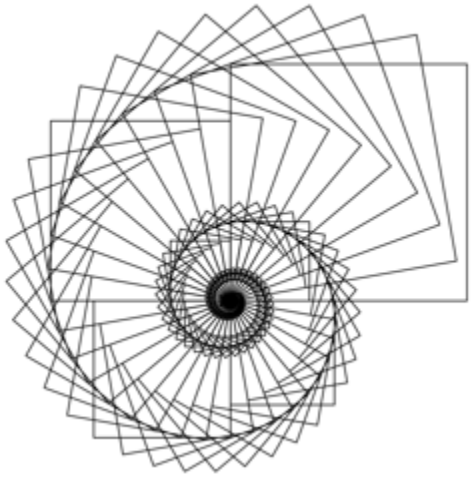
**σ(m, n) = A (exp − (( m − N 2 )2 + ( n − N 2 )2 ) /B) , 0 ≤ m, n ≤ N − 1 with σ ( N 2 , N 2 ) = 2.0 and σ(0, 0) = 0.01, where N × N is size of the image and pixel indices are in the range [0, N −1]×[0, N −1]. Find A and B, and create the matrix σ. Perform Gaussian blurring on Globe.pgm using the values of σ(m, n).**

**Input:**

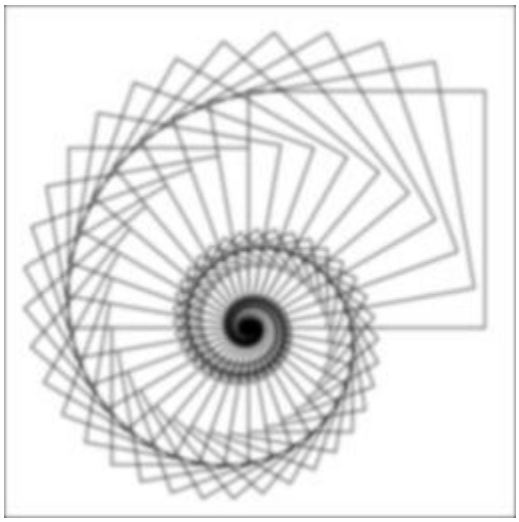

**Output:**

**2.Blur Nautilus.pgm using (a) space-invariant blur code of part 1 with σ = 1.0, and (b) space-variant blur code of part 2 with σ(m, n) = 1.0 for 0 ≤ m, n ≤ N − 1. Verify that the blurred images of the above two steps are the same.**

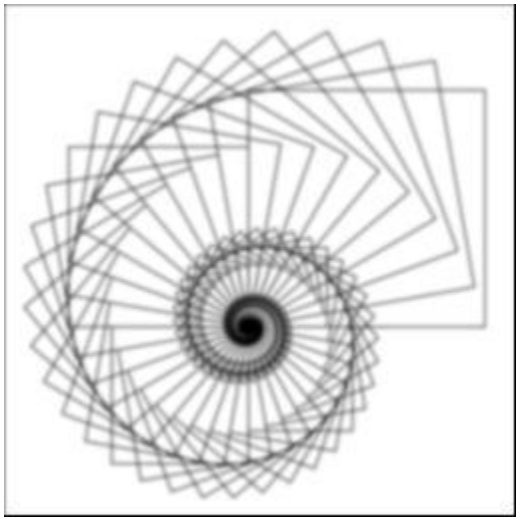
**Input:**



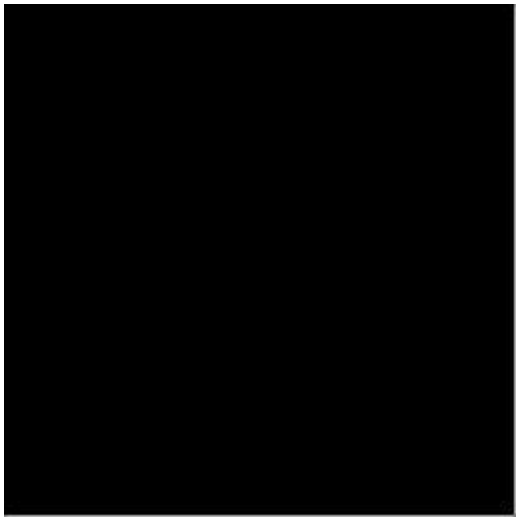
**Space-invariant Blur:**



**Space-Variant Blur:**



**Difference image:**



**Observation:** Found the sigma map of both images and obtained the space-variant blur.Observed that the output for space-variant blur with

$$\sigma(m, n) = 1.0 \text{ for } 0 \leq m, n \leq N - 1$$

And space invariant blur with $\sigma = 1.0$ is same.