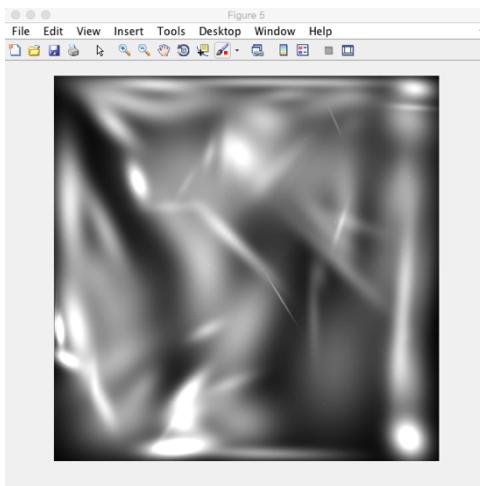


(1)Original Image



(2)Simulated Image 1
K = 1000, m = 1000, N = 1000

Notation Definition

K: number of Gaussian Contours

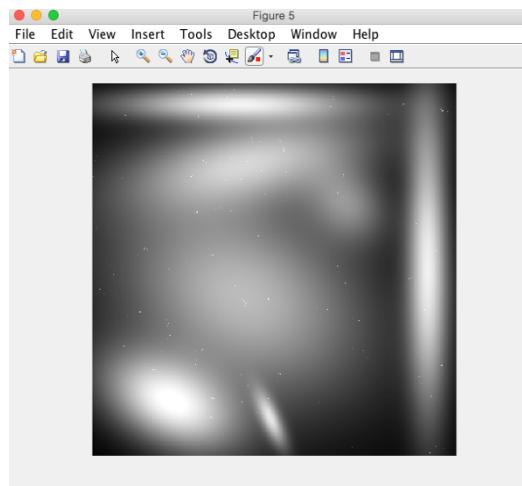
m: M-step is executed every m samples(Σ, μ, π of GMM are updated when every m samples added)

N: number of samples in the off-line loop

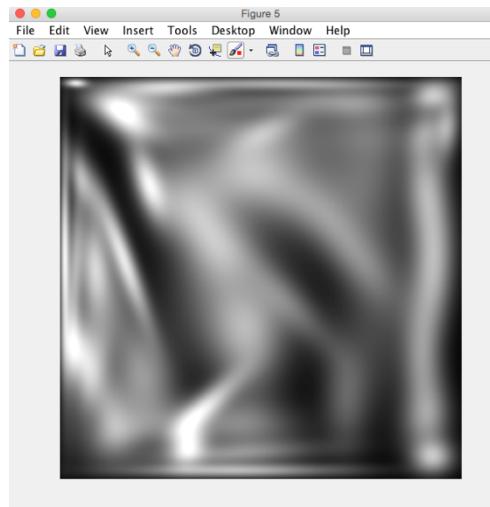
Amplify Factor: factor of amplify the Σ of initial GMM(From the Figure(4)&(5), the initial method really works)

Comparison Summary Table

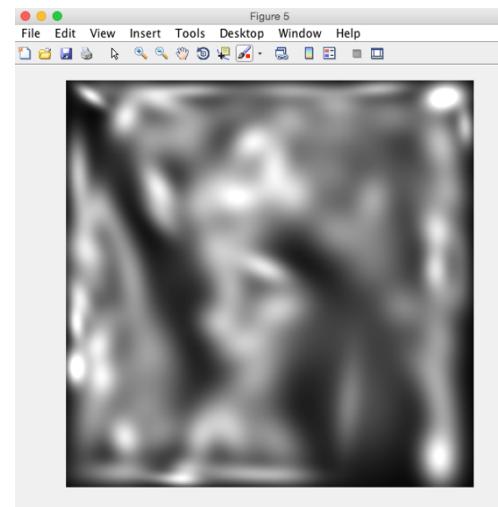
K\m	100	1000	10000
100		Few skinny Gauss	Normal Gauss
1000	overfitting	Skinny Gauss(little overfitting)	



(3)Simulated Image 2
K = 1000, m = 100, N = 1000

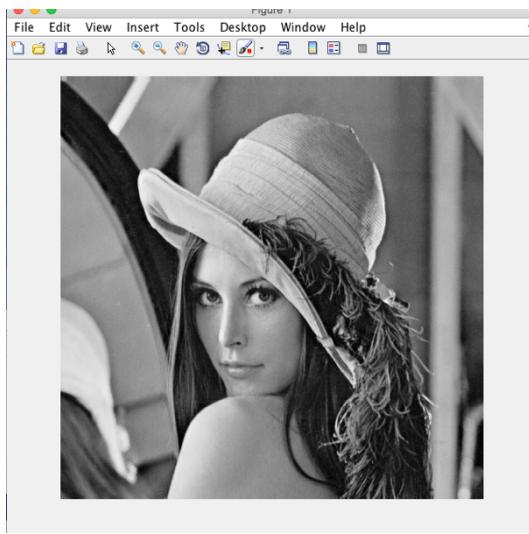


(4)Simulated Image3
K = 100,m =1000,N = 1000

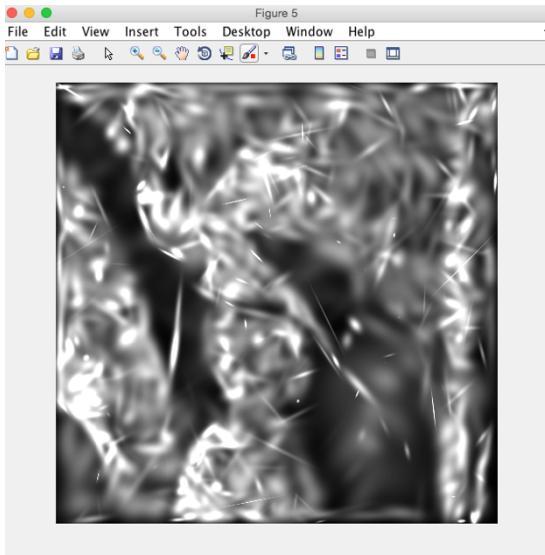


(5)Simulated Image4
K = 100, m = 1000,N = 1000
Amplify factor: 10

(6)Simulated Image5
K = 100, m =10000, N = 10000



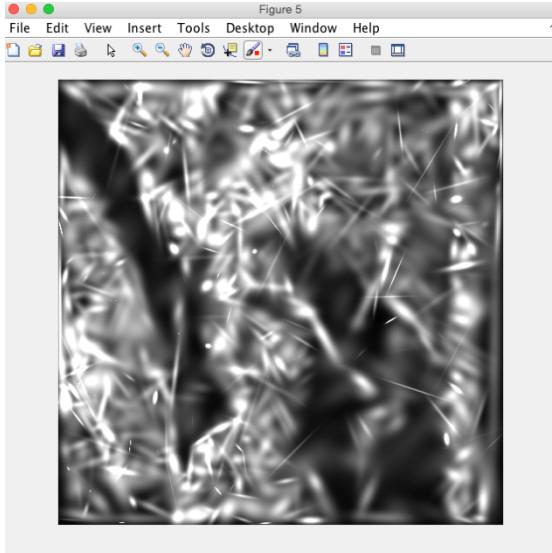
(1)Original Image



(7a)Simulated Image 7

$K = 1000, m = 10000, N = 10000$

End Iteration Times: 150000



(8a)Simulated Image8

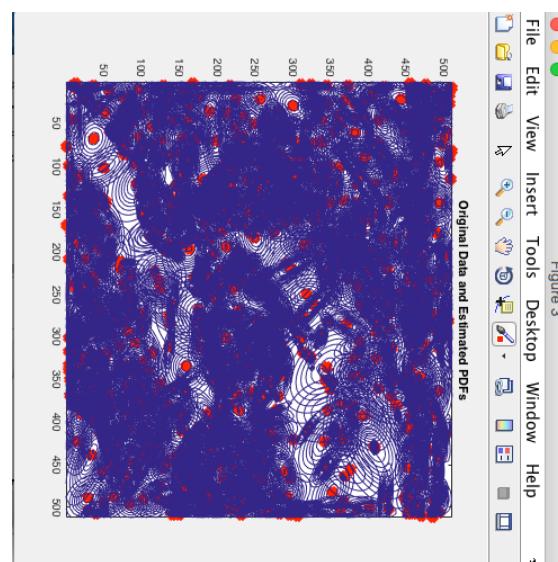
$K = 1000, N = 10000, m = 10000$

End iteration times = 180000

End condition: $5.8117e-04$

Comparison Summary Table:

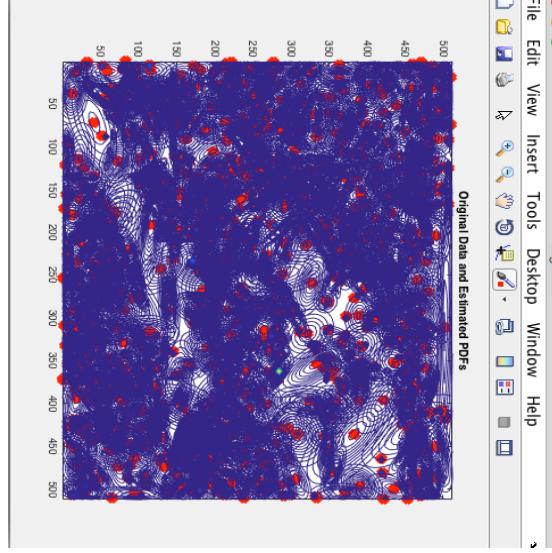
Converge Condition\Iteration Times	150000	200000
10e-03		More accurate Similar Gauss with 10e-05
10e-05	Few skinny Gauss	



(7b)GMM of Image7

Offline Converge condition: $<0.001 || i > 5 * N$

Online Converge condition: $<0.00001 || i > 150000$



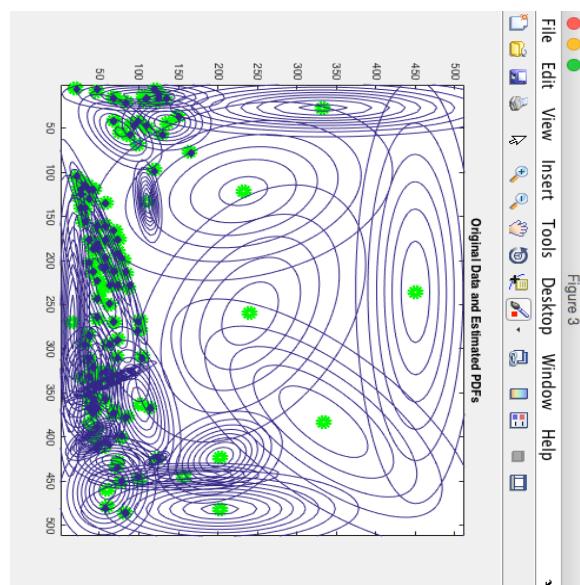
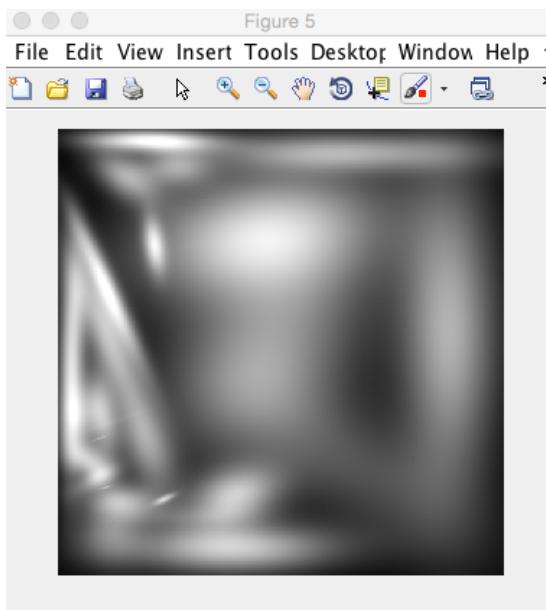
(8b)GMM of Image8

Offline condition $<0.001 || i > 10 * N$

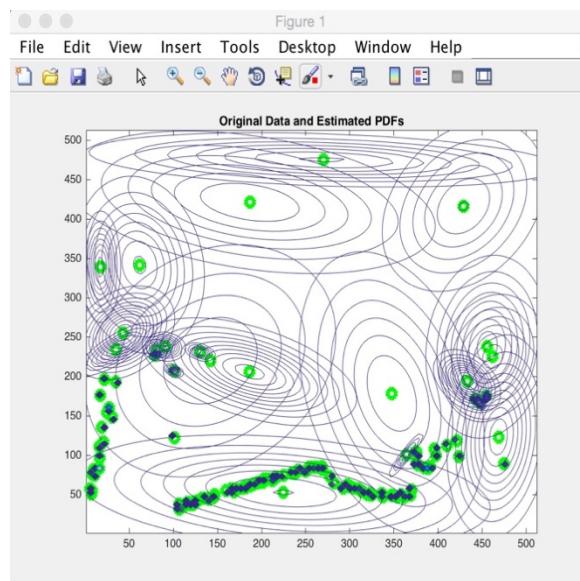
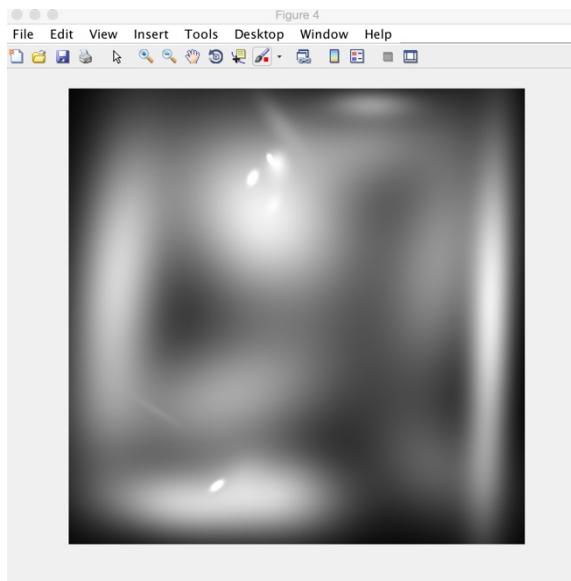
Online condition $< 0.001 || i > 200000$

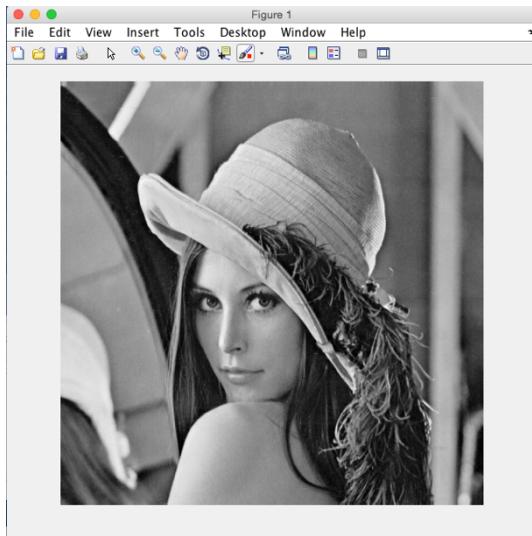
Stratified Sample Image: (Need to fix ::Correct Image Come soon)

$k = 100$ $m = 1000$ $n = 1000$

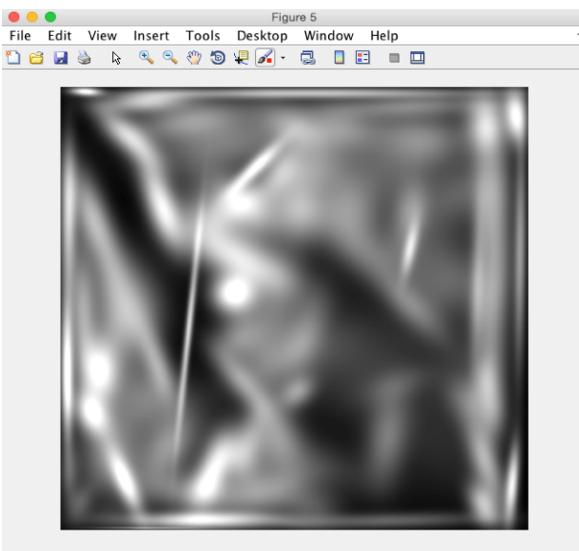


$K = 100$ $m = 10000$ $N = 10000$

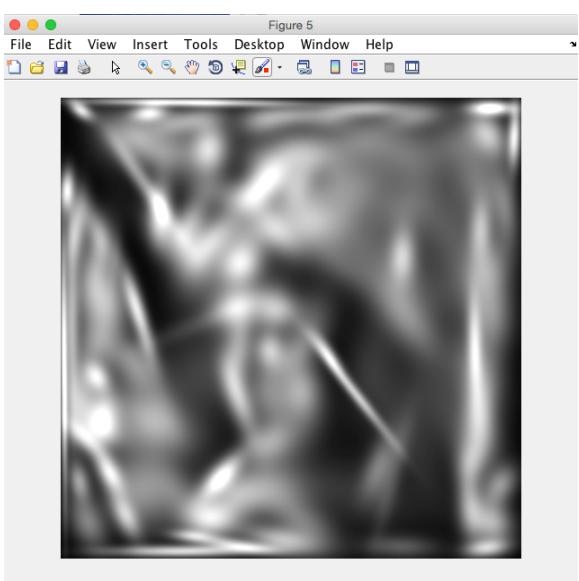
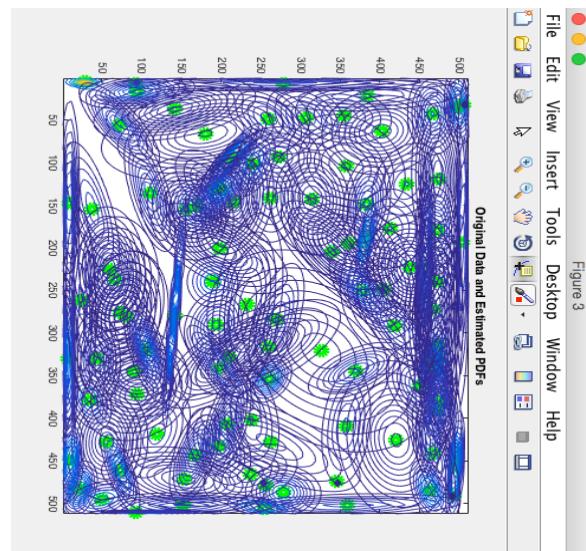




(1) Original Image



(3a) $k=100$ $m = 1000$ random sample



(9a) $k=100$ $m = 1000$ Stratified sample

