

## Computational Photography and Image Manipulation

### Programming Assignment 1

In this assignment, we will implement the texture synthesis method we covered in class: Efros and Freeman , Image Quilting for Texture Synthesis and Transfer, SIGGRAPH 2001.

\*\* because of the space and time constraints, I did not include all the results in the report. But all of them can be run and resulted by my code.

Thanks

#### **Part 1: Texture synthesis (70 pts)**

To run method3:

```
python synthesis_Method3.py --image_path data/textures/brick.jpg --block_size 50 --mode  
method_3
```

To run method2:

```
python synthesis_Method1_Method2.py --input_texture_path data/textures/text.jpg --method  
Method2 --patch_size 100 --overlap_size 20
```

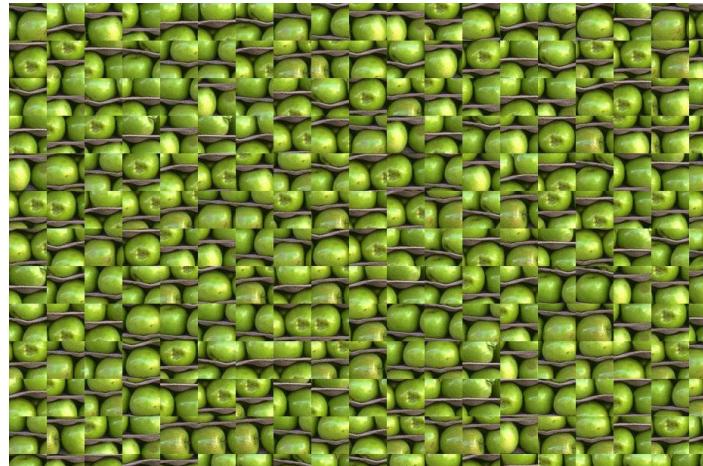
To run method1:

```
python synthesis_Method1_Method2.py --input_texture_path data/textures/text.jpg --method  
Method1 --patch_size 100
```

Texture 1: apples.png

Name	Images	
Original photo		

Texture  
Synthesis(method1)



Block\_size = 50

Texture  
Synthesis(method2)



block\_size = 50, overlap\_size = block\_size/6

Texture  
Synthesis(method3)



block\_size = 50, overlap\_size = block\_size/6

Texture 2: brick.jpg

Original photo		
Texture Synthesis(method1)		
Texture Synthesis(method2)		
Texture Synthesis(method3)	<p>block_size = 50, overlap_size = block_size/6</p> 	

Texture 3: grass.png

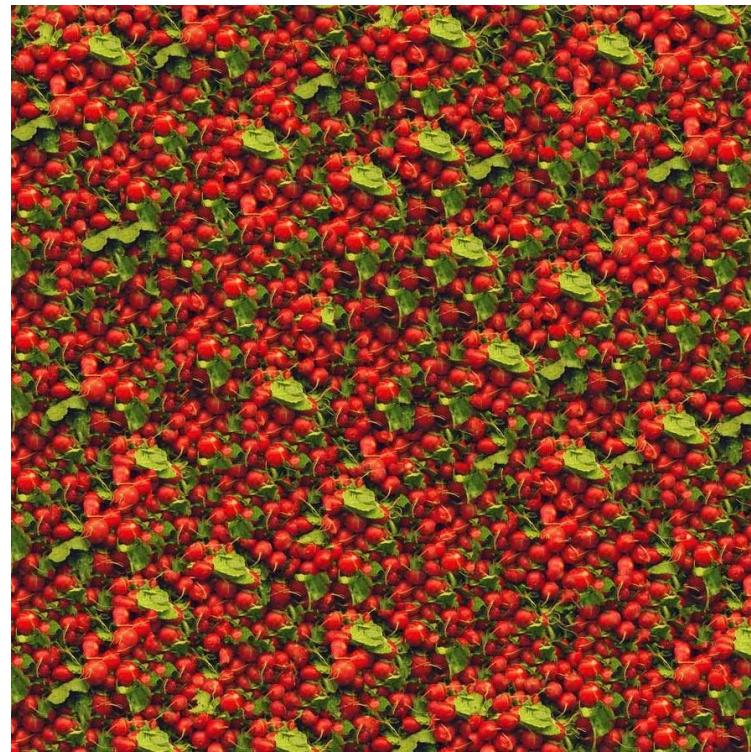
Original photo		
Original photo		
Texture Synthesis(method1)		
Texture Synthesis(method2)		
Texture Synthesis(method3)		

Texture 4: radishes.jpg

Original photo			
Original photo			
Texture Synthesis(method1)			
Texture Synthesis(method2)			

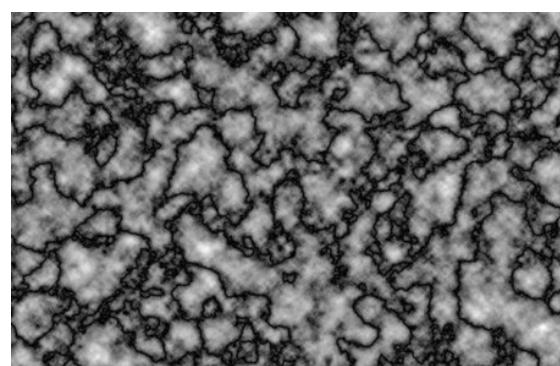
Texture  
Synthesis(method3)

block\_size = 50, overlap\_size = block\_size/6



Texture 5: random.png

Original photo



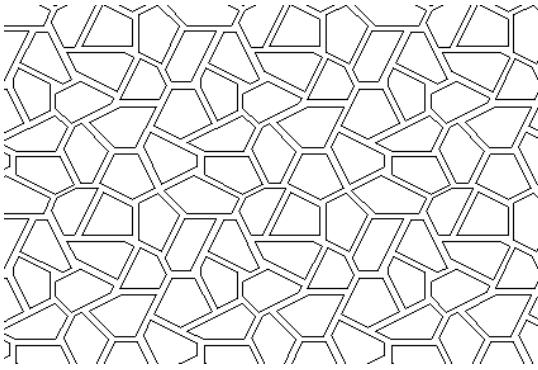
Original photo

Texture  
Synthesis(method1)

Texture  
Synthesis(method2)

Texture Synthesis(method3)		
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Texture 6: random3.png

Original photo			
Original photo			
Texture Synthesis(method1)			
Texture Synthesis(method2)			
Texture Synthesis(method3)			

Texture 7: rice.bmp

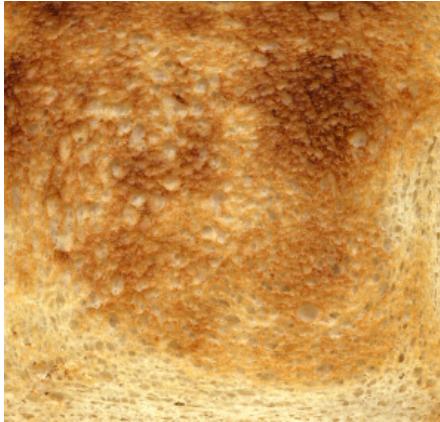
Original photo	I was not able to upload .bmp image file here	
Original photo		
Texture Synthesis(method1)		
Texture Synthesis(method2)		
Texture Synthesis(method3)		

Texture 8: text.jpg



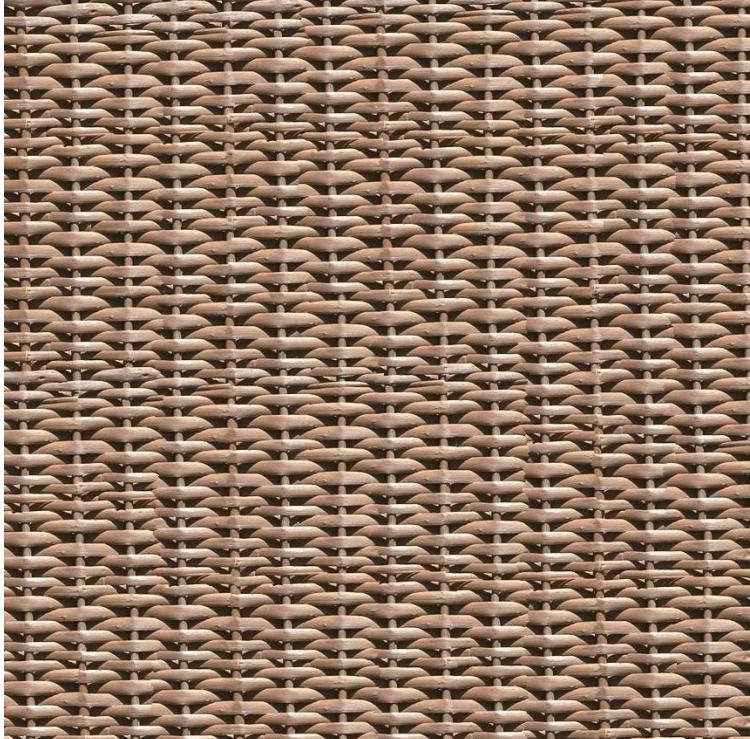


Texture 9: toast.png

Original photo			
Original photo			
Texture Synthesis(method1)			
Texture Synthesis(method2)			
Texture Synthesis(method3)			

Texture 9: weave.jpg

Original photo			
Original photo			
Texture Synthesis(method1)			

Texture Synthesis(method2)		
Texture Synthesis(method3)		

For 'grass', 'random3' and 'text', show additional results using Method 3 using a smaller and larger patch size than the one you determined and comment on the results.

text(blocksize = 100)

`text(blocksize = 150)`

## Part 2: Texture transfer (30 pts)

You should transfer the rice and toast textures into the images of Lincoln and Monroe as provided in the assignment data, showing 4 examples in your report. You should experimentally determine and

report the  $\alpha$  values you end up using for each pair. For one example of your choosing, provide extra results with different  $\alpha$  values and comment.

To run:( --block\_size 20 --alpha 0.9 for all the examples)

```
python transfer.py --texture_path data/textures/rice.bmp --target_path data/images/al.jpg  
--output_path result_transfer/al_rice.jpeg --block_size 20 --alpha 0.9
```

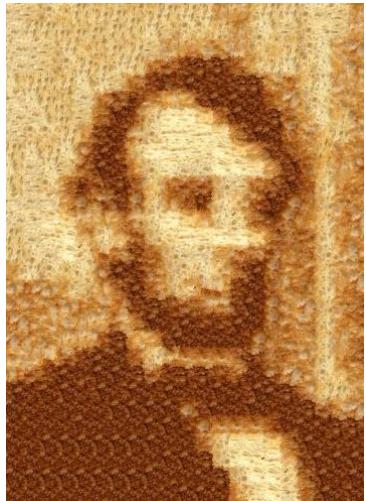
MI and toast



MI and rice



AI and toast



AI and rice with alpha = 0.9



AI and rice with alpha = 0.7

