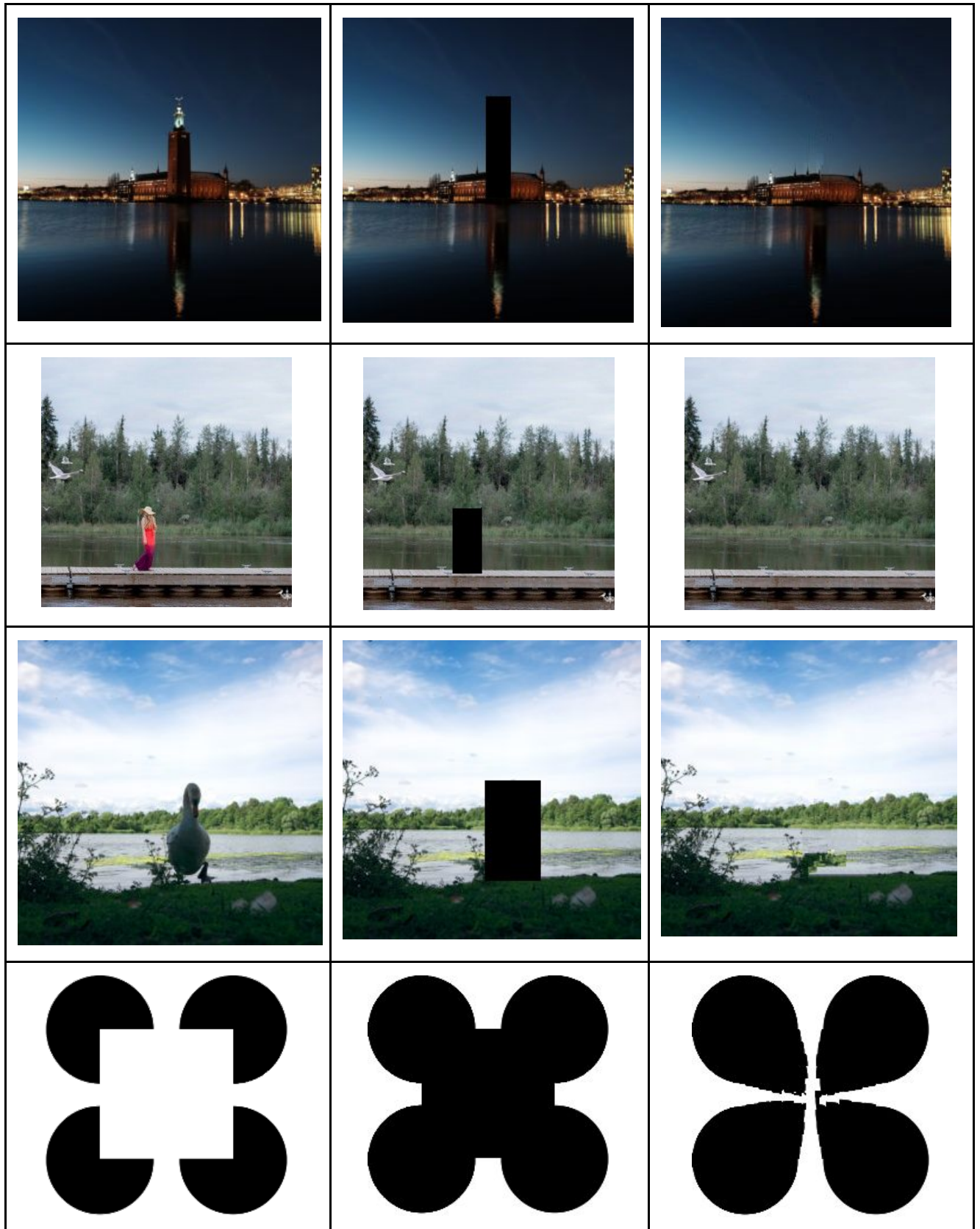
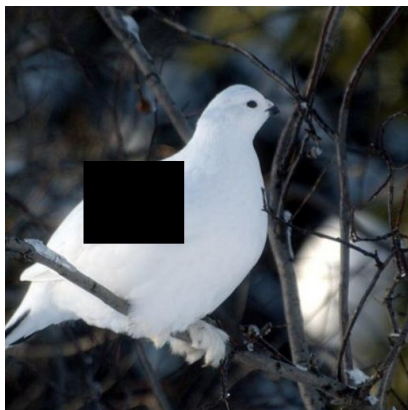
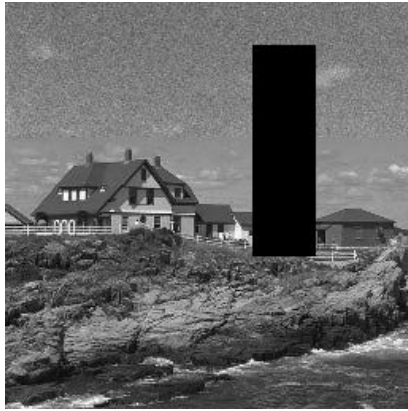
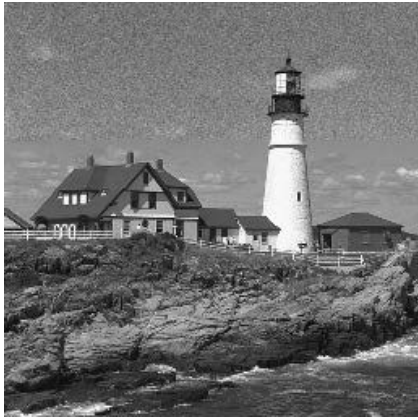
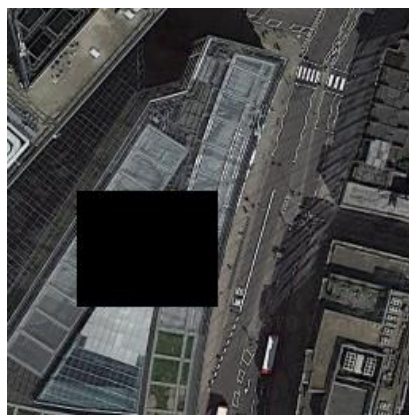
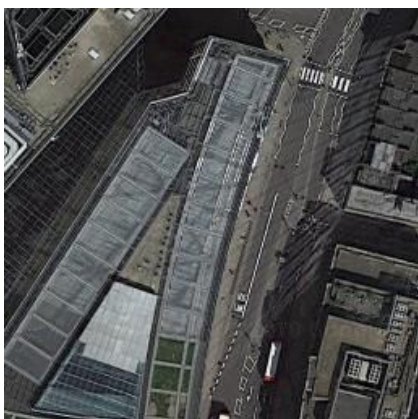


## Region Filling and Object Removal by Exemplar-Based Image Inpainting









Psi: 10 , window: 30



## **Tuning parameters:**

For better results, there are a few tuning parameters which we vary for different types of images:

- 1) **Patch size:** It should be slightly larger than the largest distinguishable texture element. “psi” is half patch size in our code. Increasing psi results in lesser time.
- 2) **Window:** “window” parameter is the search window for patches around our source patch. Increasing this parameter means that the matching pattern is at a large distance from our patch.
- 3) **Alpha:** Normalisation factor which we have kept 255 as given in the paper.
- 4) **F:** This denotes the weightage given to the data term as compared to the confidence term.
- 5) **Grad\_window:** It is the window around the patch in which we search for the maximum gradient for finding the isophote.

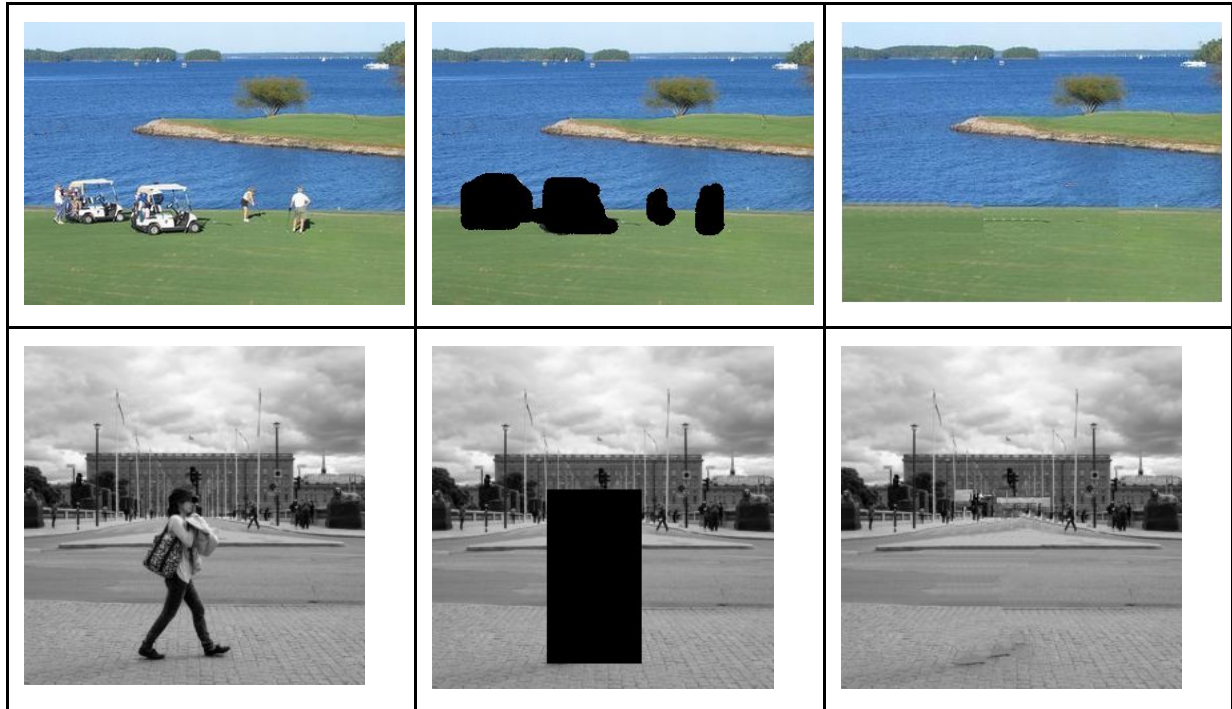
## **Our GUI tool: ( data generation purpose)**

For generating masks for images, we have developed a GUI tool in python. Pressing ‘m’ key toggles between brush and rectangle. In the brush tool, ‘+’ or ‘-’ changes brush size.



## **Object Removal:**

### **1. Removal of objects from image**



## 2. Removing overlaid text from image



psi = 4; window = 40; width=3; grad\_window = 2; f = 1.5;  
Time taken = 6 min (with fast normal)

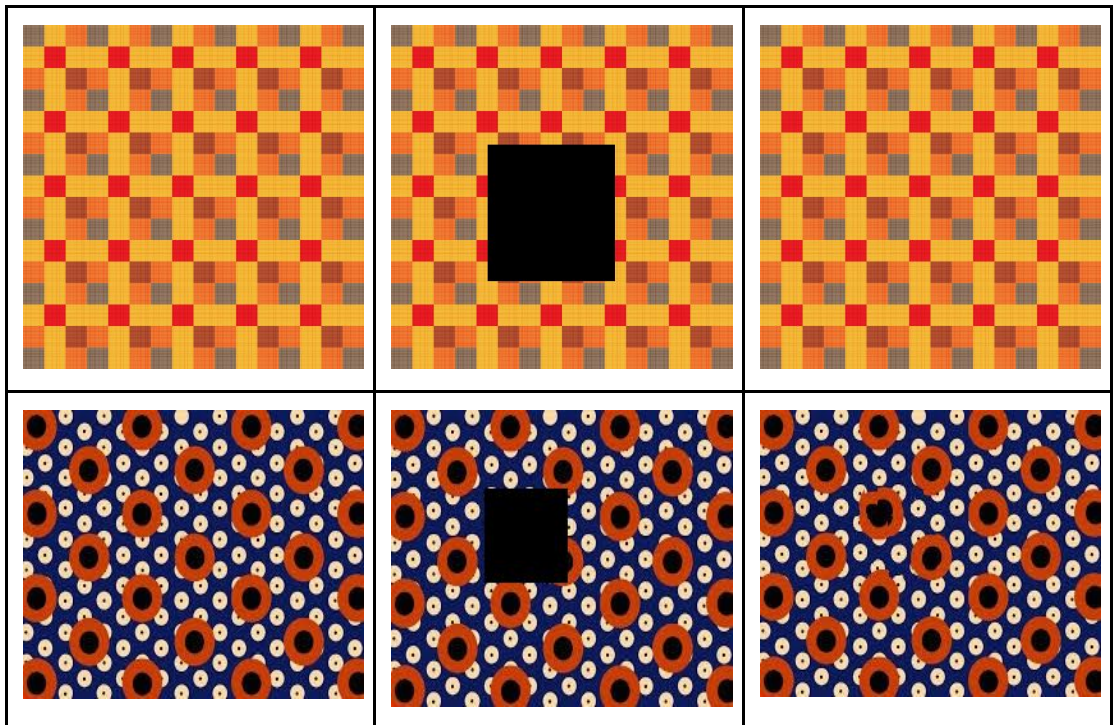
## 3. Speckles and scratches removal



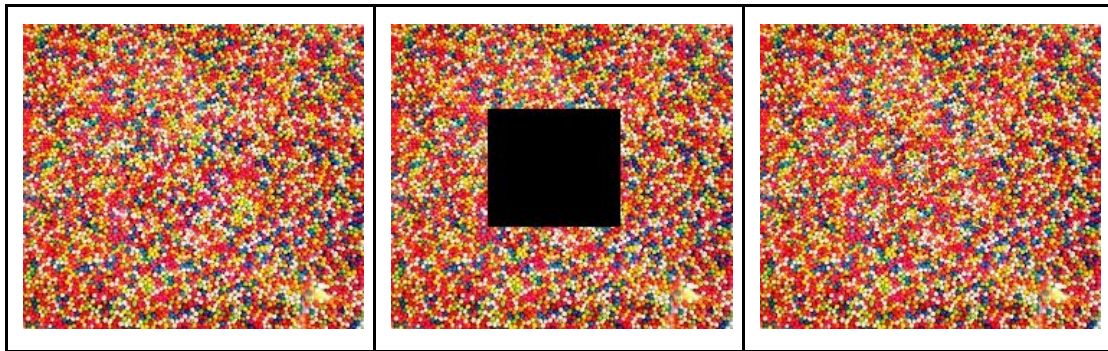


## Image regeneration:

### 1. Texture pattern images







## 2. Region-filling on an image of a text

up a rotten branch on his head. Rocks could give way underfoot, cl  
 iven the sky, with a roar of fury, sometimes sent down fingers of fir  
 ave him alive but robbed of his senses. Larth had heard that the ea  
 ad never actually seen such a thing, he nevertheless performed a  
 before he went striding across it. There's something so special abo  
 eft and then at the rocky, tree-spotted hills ahead and to her right. '
 e question made no sense to him. A place was never made, it simp  
 ed by a storm, a tree might fall into the river. A boulder might decid  
 things went about reshaping the landscape from day to day, but th  
 ted: the river, the hills, the sky, the sun, the sea, the salt beds at th  
 o express these thoughts to Lara, when a deer, drinking at the rive  
 a brushy bank and onto the path. Instead of running to safety, the c  
 nal had whispered aloud, Larth heard the words "Eat me." The dee

up a rotten branch on his head. Rocks could give way underfoot, cl  
 iven the sky, with a roar of fury, sometimes sent down fingers of fir  
 ave him alive but robbed of his senses. Larth had heard that the ea  
 ad never actually seen such a thing, he nevertheless performed a  
 before he went striding across it. There's something so special abo  
 eft and then at the rocky, tree-spotted hills ahead and to her right. '
 e question made no sense to him. A place was never made, it simp  
 ed by a storm, a tree might fall into the river. A boulder might decid  
 things went about reshaping the landscape from day to day, but th  
 ted: the river, the hills, the sky, the sun, the sea, the salt beds at th  
 o express these thoughts to Lara, when a deer, drinking at the rive  
 a brushy bank and onto the path. Instead of running to safety, the c  
 nal had whispered aloud, Larth heard the words "Eat me." The dee



up a rotten branch on his head. Rocks could give way underfoot, cliven the sky, with a roar of fury, sometimes sent down fingers of fire to save him alive but robbed of his senses. Larth had heard that the dead never actually seen such a thing, he nevertheless performed a feat before he was actually a hero such a thing: something so special about it and then at once he was no longer a hero and to her right. The question of whether he was a hero or not was never made, it simply ended by a storm that the thread of his life was never made. A boulder might decide things went on and on and the thread of his life was never made. But then the river, went over, with the sea, the salt beds at the mouth of the river, the path to the sea. A big deer, drinking at the river, a brushy bank and onto the path. Instead of running to safety, the deer had whispered aloud, Larth heard the words "Eat me." The deer

## **Experiments performed:**

- 1) We found that by changing the priority to (**confidence\_term + data\_term**) from (confidence\_term\*data\_term) as given in the paper, we got better visual results.  
*Possible reason* : Whenever the data term becomes zero, the priority should depend upon the confidence term only but this is not taken into account in the original paper as priority becomes same for all such terms.
- 2) We observed that converting our image to **YCbCr** gave good results rather than directly using **RGB** image  
*Possible reason*: We find the most similar patch through mean squared error Between two patches. Since two very different **RGB** images can give the same MSE Values ( because it is distributed in 3 channels), while **YCbCr** stores most information in it's **Y** channel.

## **Future improvements :**

1. Normal line: We have used a rather crude method (although better than that was used in the paper) to evaluate the normals of the contour of the target region. Some fast methods can be used to get a good normal line.
2. Calculation of the isophotes is also done approximately which greatly affects the build order of image. Techniques can be used to find better isophotes.
3. Square patch create some unwanted effects in images with circular patterns. Variable patch shapes can improve upon this.



