

Advanced Computer Vision

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Steganography.py finds the secret message hidden in one of the bit planes, on one of the color channels from the given image.

I used array slicing to extract each channel from the image, because I found it to be the fastest. To isolate each bit plane k (ranging from 0 to 7, total 8 planes), I created a new image with value as 2^k for each pixel. For example for a given image with secret message of size 3x3, for bit plane 1, a new image of size 3x3, is created as follows:

2	2	2
2	2	2
2	2	2

&

123	2	2
12	2	231
56	2	153

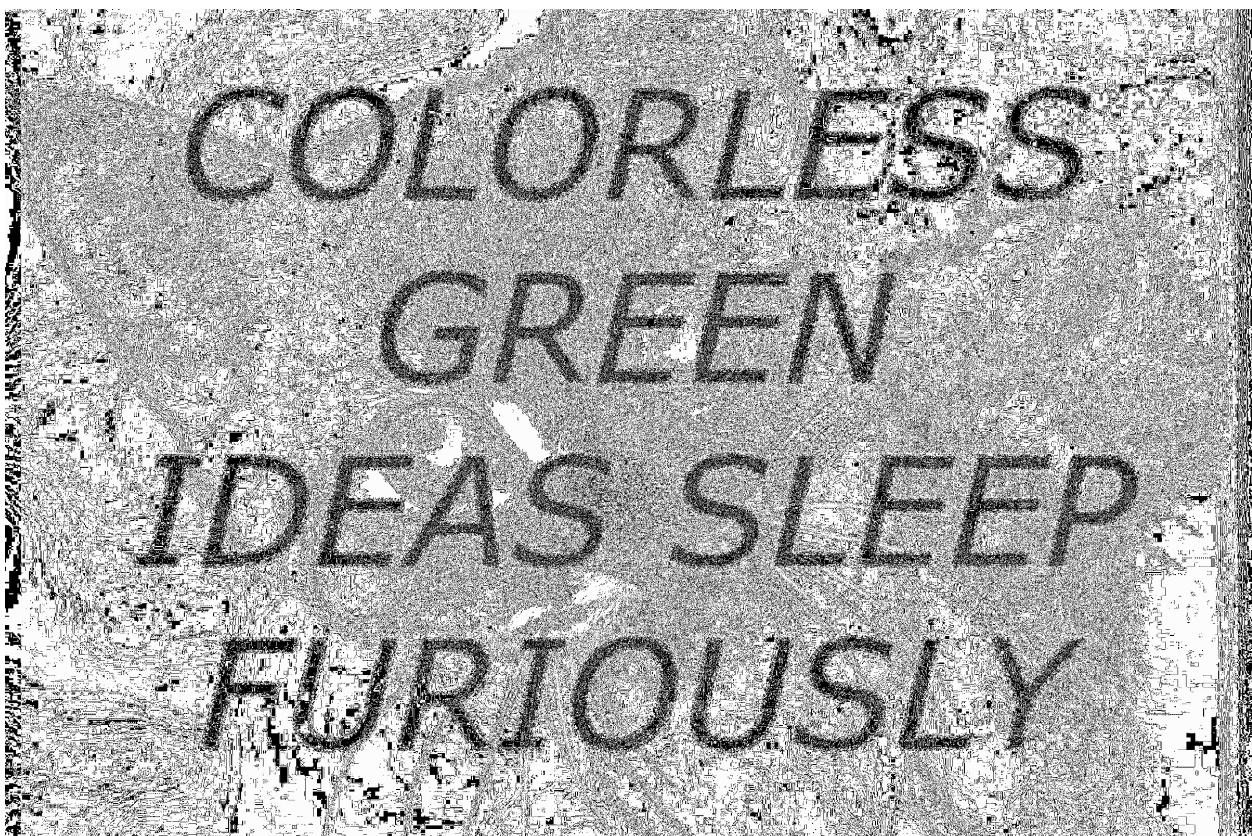
=

0	1	1
0	1	0
0	1	0

Then bitwise *and* operation is perform between the created image and one channel of the image, like shown above, to obtain the bit plane image. The position of pixels with same value as 2^k from second image will result as 1 and rest of the pixels will be 0. Since, the difference between 0 and 1 is very less, the bit plane image it multiplied with 255 to make the secret message more visible.

The program displays all 8 bit planes for each channel(total 24 images). You can save the image with the secret hidden message by pressing 's' key when it appears.

The secret message in the following image was: “*COLORLESS GREEN IDEAS SLEEP FURIOUSLY*”



The secret message in the following image was: “*THE SATELLITE ORBITS THE PLANETS*”

