

Computational Photography - CS 445

Project 2 : Hybrid Image

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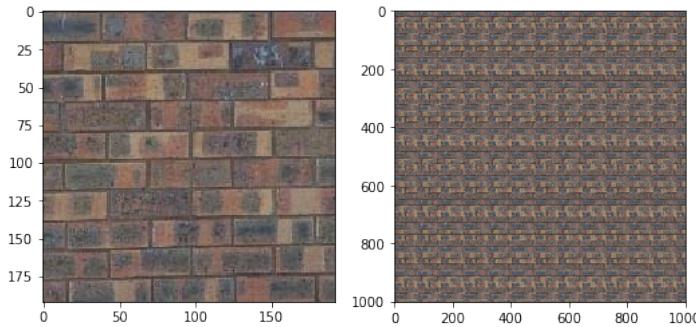
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Randomly Sampled Texture

For random sample generation, wrote a method, `pick_random_patch(..)` which randomly picks a patch of given size from the image. The selected patches are then stitched together to generate the final output.

Output Size: 1001, Patch size chosen: 81



Overlapping Patches

For overlapping patches, wrote a few helper methods.

`select_random_patch(..):`

selects a random patch of given size from the image

`generate_samples(..):`

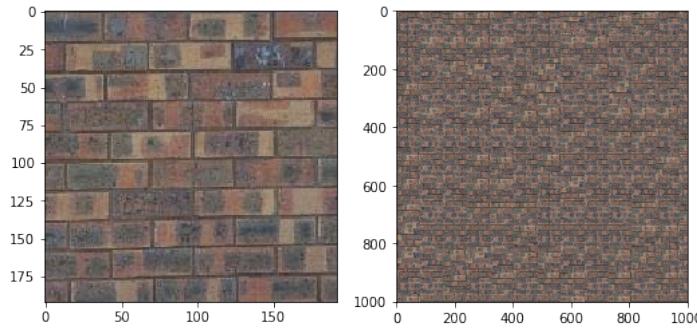
generates max (10 or 10% (number of possible patches) samples

`ssd_patch(..)`

generates sum of squared differences of existing patch and new patch

`select_sample()`

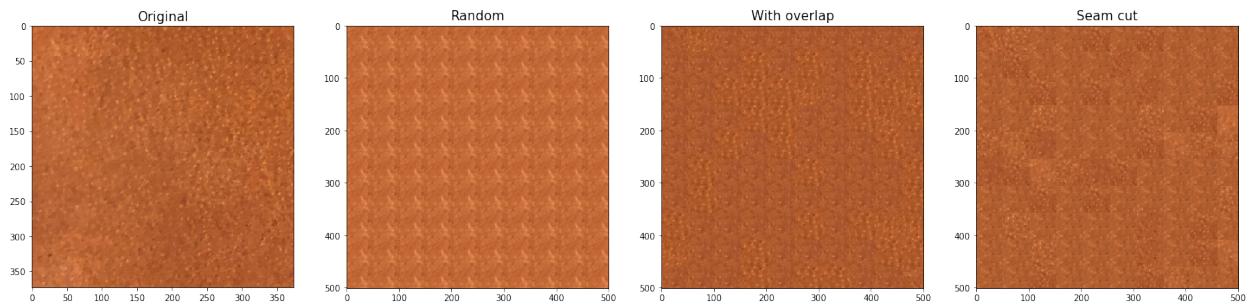
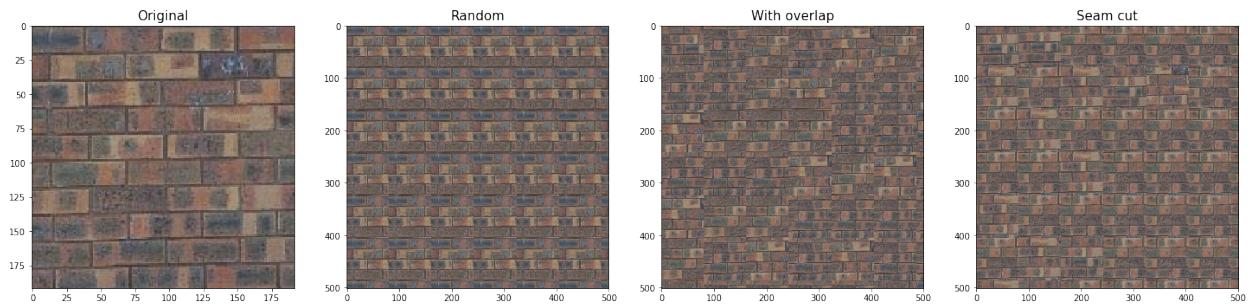
returns the final sample which will be stitched in the image

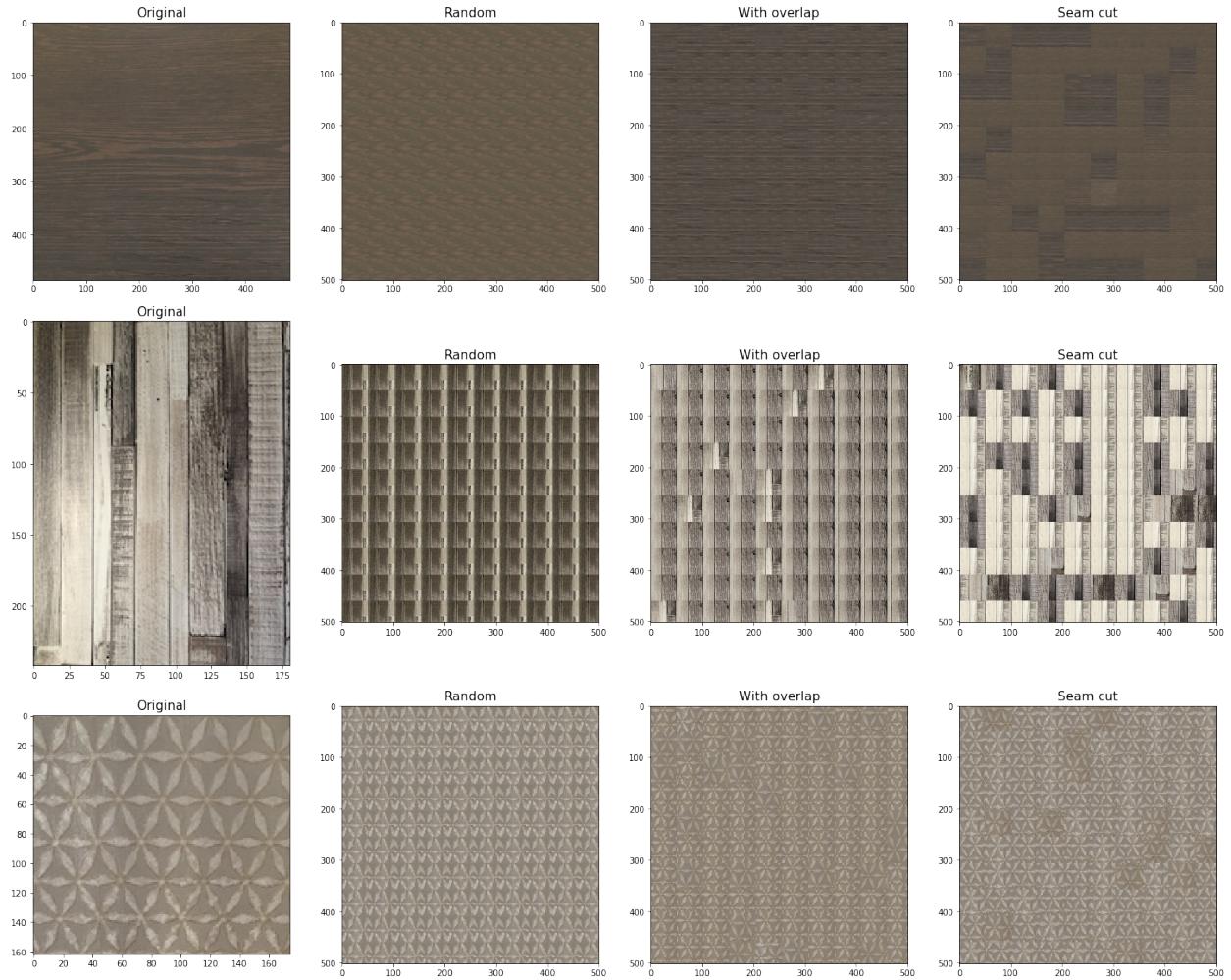


Seam Finding

Similar to SSD with overlap. Additionally utilizes the provided method `cut` to generate a smooth seam for the image.

Below are the examples and results of texture synthesis using difference techniques





Texture Transfer

For texture transfer, generate the output texture with size of the target image. Convert to target image to greyscale and Blurred the image.

Applied ($\alpha * \text{texture} + (1 - \alpha) * \text{target}$), individually to the color channels of the texture
Used $\alpha = 0.8$

Texture



Target



Texture Transfer



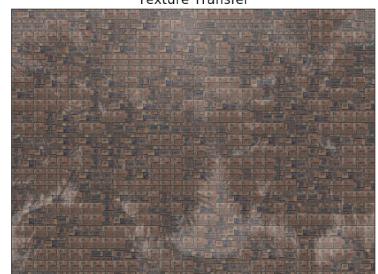
Texture



Target



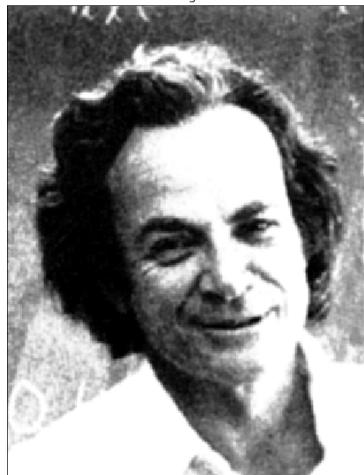
Texture Transfer



Texture

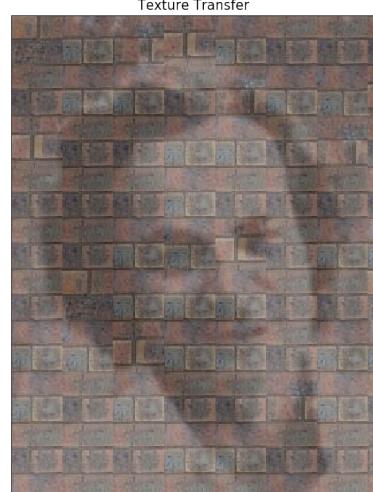
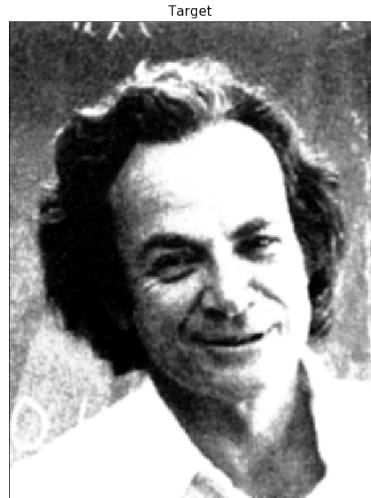


Target



Texture Transfer





Thank you!