CS 116 Homework 3

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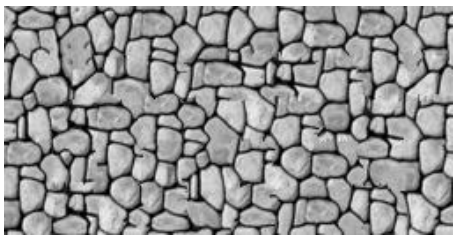
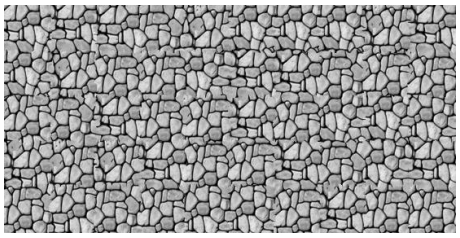
1. Changing Parameters of Synthesizing

(1) Increase the tile size:

When increasing the tile size, the size of the sampling patterns increase in the synthesized image, and therefore the output size increase. (If we scale down the resolution to the original size, it looks like the rocks get smaller and denser.) Since we use more patterns, the synthesized image looks more realistic.



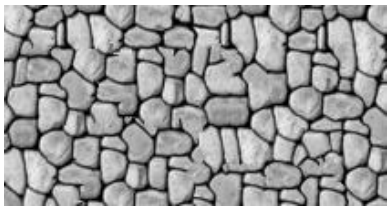
size = 30, overlap = 5, K = 5 (original)



size = 60, overlap = 5, K = 5

(2) Increase the overlap:

When increasing the overlap, the synthesized image shrinks because we make each pattern sample overlaps more. When overlap is not changed too much, the visual difference is ignorable. The desirable overlap should be around 0.1 to 0.3 size of the patterns in this example. If too low, the output image converge to direct pasting; if too high, only the central sample are used.

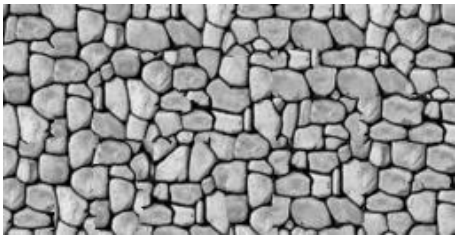


size = 30, overlap = 10, K = 5

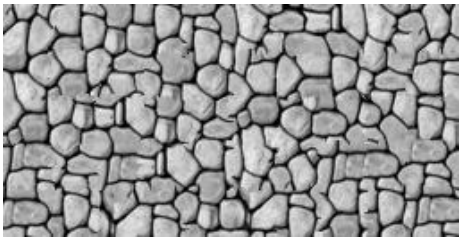
size = 30, overlap = 20, K = 5

(3) Decrease the value for K:

Since K represents the number of top candidate matches we choose from, when decreasing K, we use more closest matches. Ideally the synthesized image should looks more realistic. However, since the rock patterns are small and simple, to me it does not make observable changes.



size = 30, overlap = 5, K = 1

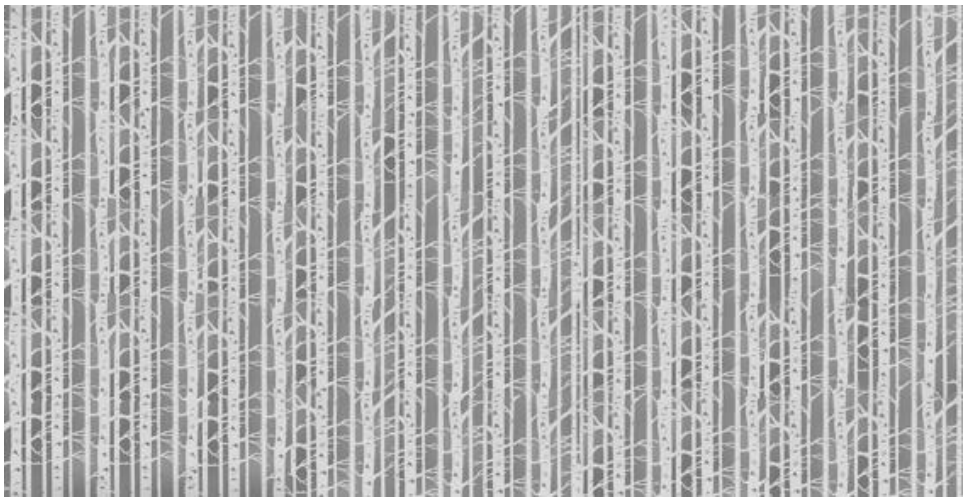


size = 60, overlap = 5, K = 10

2. Samples

(1)

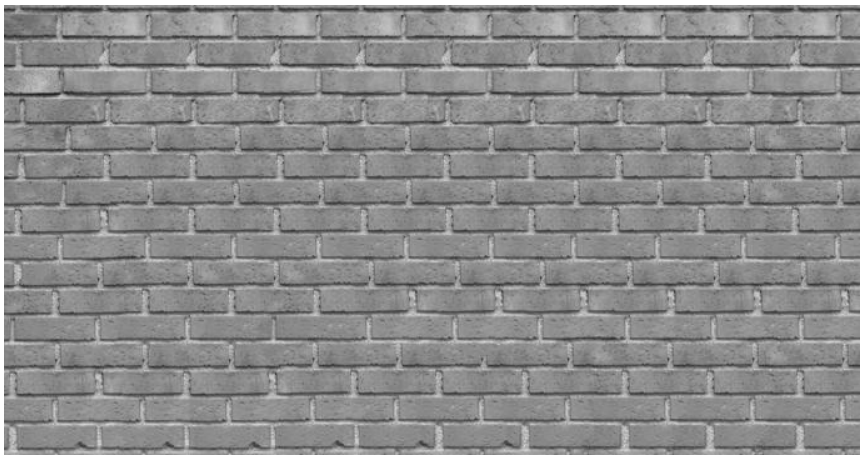
200 × 200



size = 70, overlap = 15, K = 3

(2)

400 × 400



size = 100, overlap = 35, K = 5