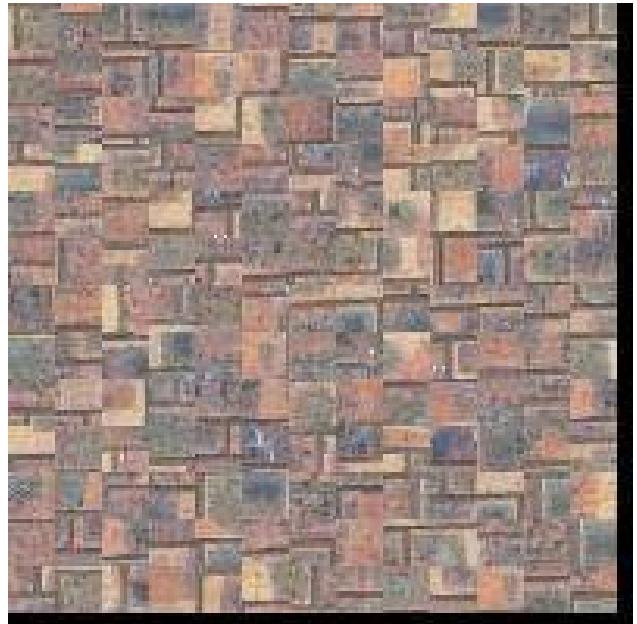


Name (netid): Garen Hu (zihanh2)
CS 445 - Project 2: Image Quilting

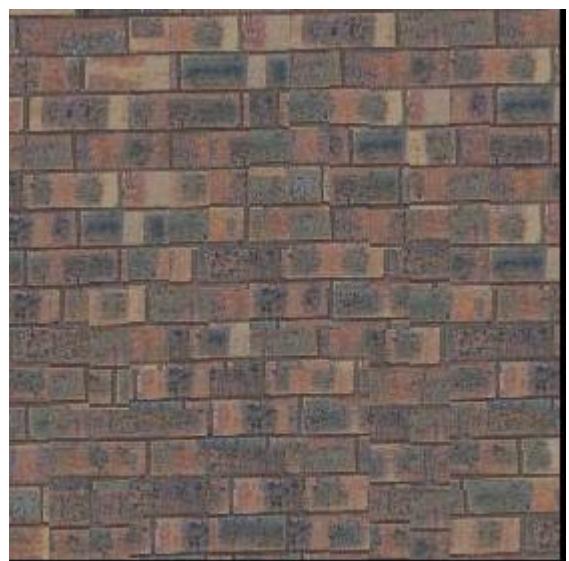
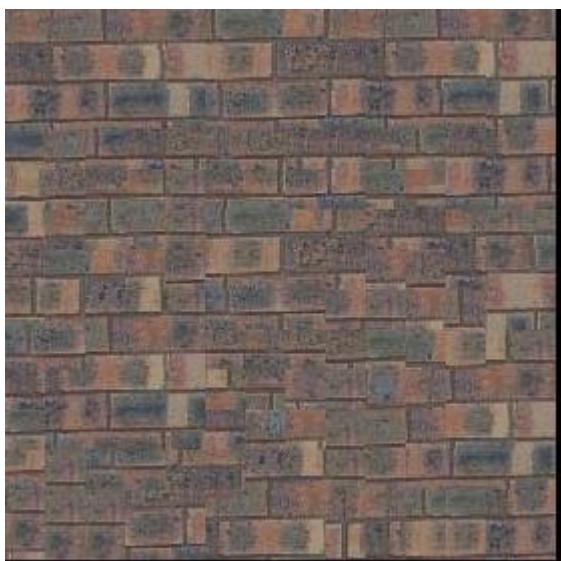
1. Randomly Sampled Texture

- Sample and output images



- Parameters: patch size = 15, output size = 200

2. Overlapping Patches

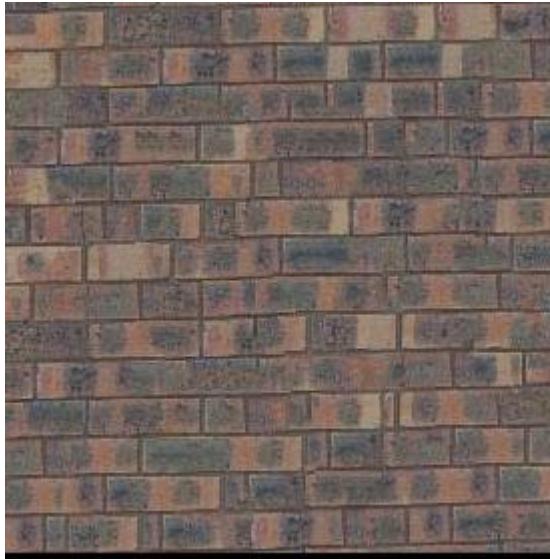


- Parameters: patch size = 35, overlap size = 15, tolerance = 3 output = 300

3. Seam Finding

Include

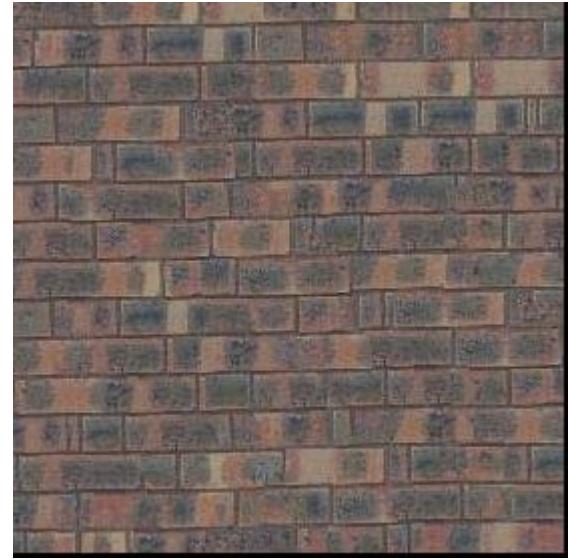
- Output image for the same sample as part 1



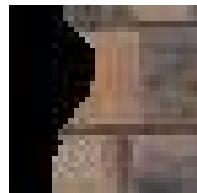
left overlap



left part of the cut



right overlap



right part of the cut

the cut

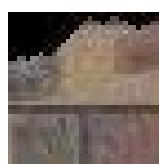
SSD value is a wd array, since the value has too many digits, it is hard to display, so I have a copy in the zip folder.

1	(192, 192, 3)	58	00900209e-02 1.13590170e-02 1e-02	84	2.2145382e-03 2.4606057e-04	140	1.24500000e-02 1.13590170e-02
2	[1, 44000000e-03 4.55363842e-03	59	38400315e-04 1.53787115e-05 3.49	85	2.2145321e-03 2.94973449e-15	143	5.53634054e-03 5.53634054e-03
3	1.35954618e-03 8.85813210e-03	60	38409712e-04 2.21453784e-03 1.38	86	1.24500000e-02 1.13590170e-02	144	4.48443156e-02 9.16168671e-03
4	1.47799280e-02 1.67474151e-02	61	46021432e-03 4.98269639e-03 9.84	87	3.46623105e-03 1.135903456e-02	145	1.67473888e-02 2.33910825e-02
5	6.18388519e-02 6.69896678e-02	62	84467256e-04 1.7310981e-15 1.86	88	7.33553939e-04 5.53635336e-04	146	17.33593533e-04 3.93694621e-03
6	3.84467894e-02 1.7777730e-02	63	84467256e-04 1.7310981e-15 1.86	89	1.24505741e-03 4.98278988e-03	147	3.79644178e-15 5.55178045e-04
7	1.81615380e-02 1.91175795e-02	64	18564747e-17 2.11854442e-19 1.38	90	1.2110623e-02 6.15147286e-03	148	3.46623105e-02 4.88909945e-02
8	4.9827071e-03 8.13533990e-03	65	99387870e-04 1.53787115e-05 3.49	91	5.53630894e-04 3.8408195e-04	149	3.39715244e-02 4.88909945e-02
9	4.91315594e-03 8.13533990e-03	66	56334820e-04 1.24567576e-03 1.84	92	6.15139494e-05 1.8682179e-03	150	5.53570573e-03 2.25413117e-02
10	5.53634054e-04 5.53634054e-04	67	86802163e-03 5.53635660e-04 2.46	93	5.33786675e-03 1.24456709e-03	151	8.42137422e-02 7.33556899e-02
11	[1, 24569855e-02 1.38408241e-02	68	5791508e-03 7.33559587e-04 6.15	94	1.33776675e-03 1.24456709e-03	152	1.74567405e-03 2.46859268e-02
12	9.61170085e-03 8.135368388e-03	69	78206677e-03 6.78195776e-03 6.78	95	4.44444426e-03 8.13533139e-03	153	5.53635684e-04 4.44445242e-03
13	2.89025072e-15 9.84236869e-04	70	84060338e-04 6.61169597e-04 1.20	96	3.81422545e-03 3.2525601e-15	154	6.78206676e-03 1.38408431e-02
14	5.53634054e-04 3.8488187e-04	71	304400338e-04 6.61169597e-04 1.20	97	7.44329128e-03 4.66928171e-03	155	17.53556899e-04 5.53634054e-04
15	9.84237477e-04 3.36564856e-03	72	21453762e-03 2.4606096e-04 3.14	98	1.38408642e-04 3.8408869e-04	156	3.46623105e-02 5.53634054e-04
16	4.9827071e-04 3.36564856e-03	73	56334348e-04 5.53633240e-04 6.78	99	1.24500000e-02 3.81423624e-03	157	1.29334896e-02 3.11419538e-03
17	7.33553939e-04 1.24567576e-03	74	72033857e-01 2.55917031e-01 1.67	100	1.24500000e-02 3.81423624e-03	158	1.24557246e-03 2.46856407e-04
18	7.33553577e-04 1.24567576e-03	75	59908110e-04 1.84974087e-05 1.84	101	1.12110612e-02 5.51571522e-02	159	3.84471832e-04 2.58515825e-02
19	7.33553577e-04 1.24567576e-03	76	46021339e-03 2.46060880e-04 1.38	102	6.15145783e-05 1.38407711e-04	160	4.65262921e-02 2.33910108e-02
20	[2, 59908234e-03 4.4444712e-03	77	24803387e-03 2.46060880e-04 1.38	103	1.53786675e-02 2.46859434e-04	161	5.53636383e-04 1.38408431e-02
21	1.24567395e-03 3.46086626e-03	78	40857460e-04 5.11514911e-05 3.43	104	4.9826991e-03 1.29334732e-02	162	1.44445242e-03 2.46859268e-02
22	2.21452781e-03 1.33968036e-02	79	84232960e-04 5.15154906e-04 1.53	105	1.47789373e-02 1.12110606e-02	163	8.03266524e-04 5.53634054e-04
23	2.53506856e-03 3.09155384e-03	80	53632932e-04 1.47730606e-16 5.53	106	8.13533375e-03 1.57477935e-02	164	[2, 22668711e-02 6.78200761e-03
24	3.8488187e-03 3.57125729e-03	81	98260144e-03 7.43428120e-03 3.46	107	3.84467588e-04 4.98278988e-04	165	3.46028027e-03 1.57388235e-05
25	5.5378632e-05 1.89019120e-15	82	38408447e-03 2.21453820e-03 1.24	108	1.24500000e-02 3.81423624e-03	166	8.68514706e-03 3.84471832e-04
26	5.55171198e-03 1.47799296e-02	83	38408447e-03 2.5590851e-03 1.20	109	1.24500000e-02 3.81423624e-03	167	1.53779956e-05 3.81423580e-03
27	5.53632734e-04 8.13533226e-03	84	21453820e-03 2.5590851e-03 1.20	110	[4, 82232990e-02 6.69896126e-02	168	6.78206676e-03 3.46028197e-03
28	5.53791992e-05 5.53633842e-04	85	31100000e-03 2.40734408e-15 3.84	111	1.67474031e-02 1.12110692e-02	169	1.44445242e-03 2.46859268e-02
29	[1, 24569855e-03 2.21454075e-03	86	53791772e-03 1.53787402e-03 1.53	112	1.2855983e-02 1.16401378e-01	170	1.44445242e-03 2.46859268e-02
30	8.13533421e-03 2.13545340e-02	87	46021409e-03 1.29334850e-02 3.46	113	3.46021041e-03 5.17394851e-02	171	8.03266524e-04 5.53634054e-04
31	7.33553577e-04 1.24567576e-03	88	40857460e-04 5.11514911e-05 3.43	114	2.39937001e-02 1.08308269e-02	172	6.69898587e-02 2.31797875e-02
32	1.53787402e-03 2.21452781e-03	89	53553839e-04 5.36353300e-04 3.93	115	2.39937001e-02 1.08308269e-02	173	[1, 47789199e-02 6.78199866e-03
33	9.84236733e-04 1.86862246e-03	90	24567441e-03 1.38408241e-03 2.33	116	9.84240763e-04 1.38408195e-02	174	5.55170952e-03 1.29334744e-02
34	6.78199873e-03 1.33959927e-02	91	12110623e-02 6.15147866e-03 3.46	117	7.44338679e-03 3.81422884e-03	175	1.24557246e-03 2.46856407e-04
35	5.55171198e-03 1.47799296e-02	92	15139440e-05 1.86862170e-03 1.86	118	3.69340168e-15 3.80513852e-03	176	7.44338679e-03 3.81422884e-03
36	6.15147881e-03 1.21110606e-02	93	53633823e-04 1.3105982e-03 1.38	119	[5, 55171067e-03 1.20569807e-02	177	6.78206676e-03 3.46028197e-03
37	2.21452781e-03 5.53634054e-04	94	93786730e-04 1.3105982e-03 1.38	120	1.99307941e-02 3.46020176e-03	178	1.24557246e-03 2.46859268e-02
38	[2, 59908234e-03 4.4444712e-03	95	44444426e-03 8.13533130e-03 9.61	121	3.11408677e-02 6.108308269e-02	179	1.24557246e-03 2.46859268e-02
39	8.13533995e-03 1.33959927e-02	96	01422545e-03 3.25258168e-03 1.53	122	1.57477987e-02 6.15480578e-02	180	9.64237536e-03 2.46859268e-02
40	1.40403863e-03 1.24567576e-03	97	1.34464441e-03 3.25258168e-03 1.53	123	1.24500000e-02 3.81423624e-03	181	2.33910108e-03 1.24557246e-03



top_part

Horizontal cut



bottom_part



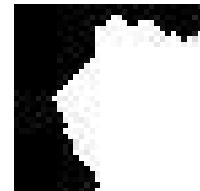
top_left



bottom_right



combination mask



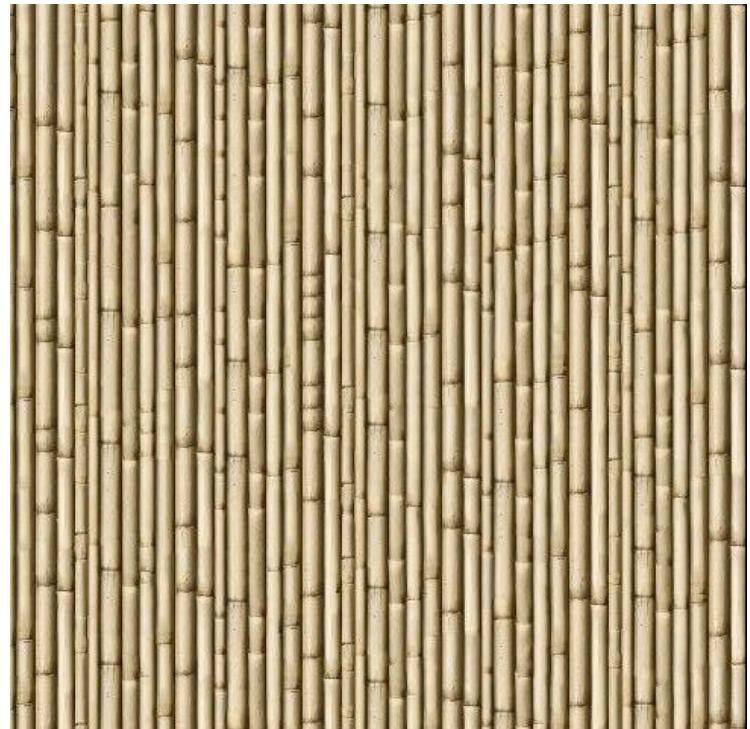
- At least two quilting results on your own images (excluding provided samples). Each outcome should show input texture image and output, and output should be more pixels than input.

Wood texture

texture image 260 x 260



output image 500 x 500

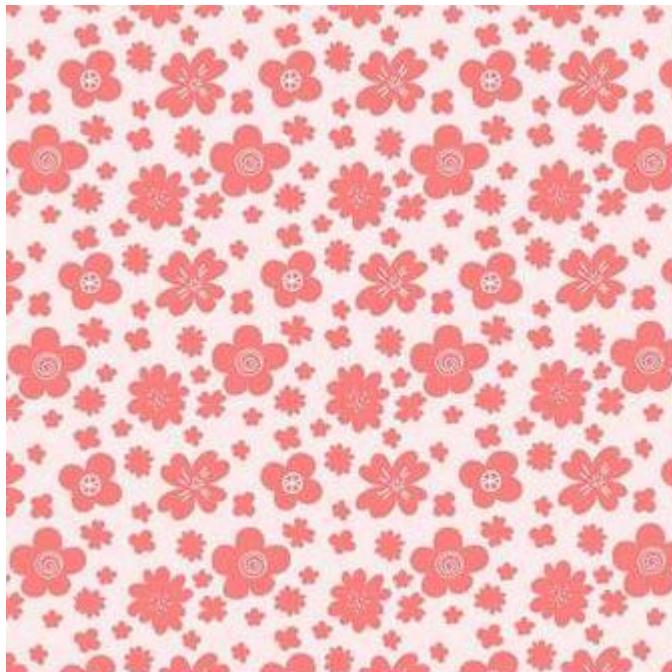


source: <https://in.pinterest.com/pin/345088390178939751/>

flower texture 200 x 200



output image 350 x 350



source: <https://www.vecteezy.com/free-vector/red-paper-texture>

5. Texture Transfer

Include

- Brief description of texture transfer method and parameters
- At least two texture transfer results (one result can use provided samples). Include the input texture and target images and the output (output should be the same size as the target image)

Basically, the cost map for the texture transfer is consist of two components. The first one is the overlapping cost between two neighboring patches. The second part is the cost of the correspondence maps. The overlapping cost is just the same as part 2. For the cost of the correspondence maps, I need several steps to deal with it. First, I need to convert the sample image and guidance image to greyscale to make the calculation of SSD cost easier. Second, I need to gaussian blur to each image to make low-frequency intensities match but not details or color. Then I can find the second cost map. There is also a variable alpha to control the weight of each cost map when getting the final patch.

parameters: patchsize = 15 overlap = 8 tol = 3 alpha = 0.3



source:

<https://www.alamy.com/stock-photo-monsieur-sarazin-133428170.html?imageid=F83D9357-3104-4B3A-B4A8-9BDE773555E7&p=383793&pn=1&searchId=e85859f4f05ac771295cd051a3d27784&searchtype=0>

parameters: patchsize = 15 overlap = 8 tol = 3 alpha = 0.4



source: <https://www.pinterest.com/pin/839358449278825460/>

6. Quality of results/report

Nothing extra to include (scoring: 0=poor 5=average 10=great).