

Part 1a 1-d SOM Implementation:

Experiment to find suitable parameters: There is no accuracy metric in MATLAB to evaluate my implemented SOM so the experiment results will be interpreted visually, Table 1 will show the change in each parameter then the result will be a cross or a tick, indicating whether the visually assessed Kohonen SOM has improved in shape or not. The last one to improve will be used. Whilst adjusting 1 parameter the other parameters will be set at 15, 1 and 5.

The number of iterations used was decided with help from slide 16. "The convergence phase needs 500* the amount of neurons in the network" and the order phase "needs at least 1000." For each test the training steps will increase as per the above 'equation'.

Neuron Count	Result	Start Learning Rate	Result	Start Radius	Result
5	X	0.05	✓	2	X
10	X	0.1	✓	5	X
15	X	0.5	X	9	✓
20	✓	1	X	13	✓
25	✓	1.5	X	18	✓
+5...	✓	2	X	23	X
45	✓				
50	X				

Table 1: Results of 1-d Experiment to find suitable parameters

The best parameters were
 Neuron Count: 45
 Start Learning Rate: 0.1
 Start Radius: 18

Figure 1: Completion of 1-d SOM Implementation without adjusting parameters.

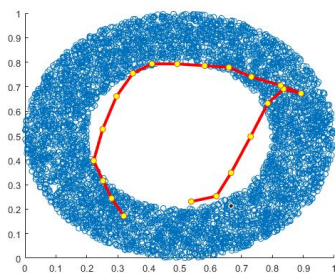
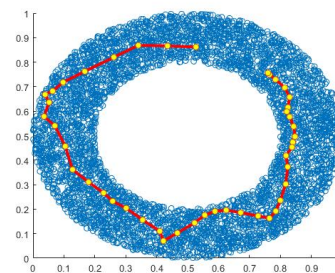


Figure 2: Completion of 1-d SOM Implementation with adjusting parameters.



Part 1b 2-d SOM Implementation:

The experimentation is the same as 1a. The standard values used for each parameter are 25, 3, 0.1, 5. Table 2, Figure 3 & 4 Shows the results.

Part 2 Not Attempted

Neuron Width Count	Result	Neuron Height Count	Result	Start Learning Rate	Result
5	X	2	X	0.05	✓
10	X	3	X	0.1	✓
15	X	4	✓	0.5	✓
20	X	5	✓	1	X
25	X	6	✓	1.5	X
+5...	X	+1...	✓	2	X
40	✓	8	✓		
45	X	9 (Too Populated)	X		

Start Radius	Result
2	X
5	X
9	✓
13	✓
18	✓
23	✓
28	✓
33	X

Table 2: Results of 2-d Experiment to find suitable parameters

Figure 3: Completion of 2-d SOM Implementation without adjusting parameters.

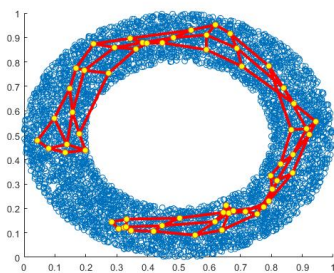


Figure 4: Completion of 2-d SOM Implementation with adjusting parameters.

