Homework 2. (25% of the final grade – assuming you pass the final.)

Due date (June 21 (before special Sunday class), -5 points if before June 24 (last class) -10 points if before July 8. Not accepted after July 8.)

**Kohonen algorithm. (See Text (Faussett) , chapter 4 and p. 183 for examples of snapshots in a different problem.)**

Prepare a full report on what you did including results, learning rates, number of iterations until convergence . It is important to include screenshots of the snapshots at different iteration times of the algorithm ,

1. Implement the Kohonen algorithm (your own code ) to perform the following tasks.

For each of these show "snapshots" of the placement of the neurons at different number of iterations of the algorithm. It may be best to start the initial "locations" of the neurons as small random (x,y) values (i.e. all between -.2 < x,y < .2

1. Given a sequence of 30 neurons arranged in a straight line; take data from a circle of radius 2 (centered at the origin), with the data points chosen uniformly and randomly within the circle.
2. Do the same when the 30 neurons have the topology of a circle.
3. Do the same for 25 neurons arranged in a 5 x 5 topology.
4. Now repeat A, B, and C above but where the data is chosen randomly but with a probability proportional to the distance from the center.
5. Now repeat A and B but where there are two concentric circles centered at the origin one with radious 2 and one with radius 4; and all data is chosen from the ring between radius 2 and radius 4.