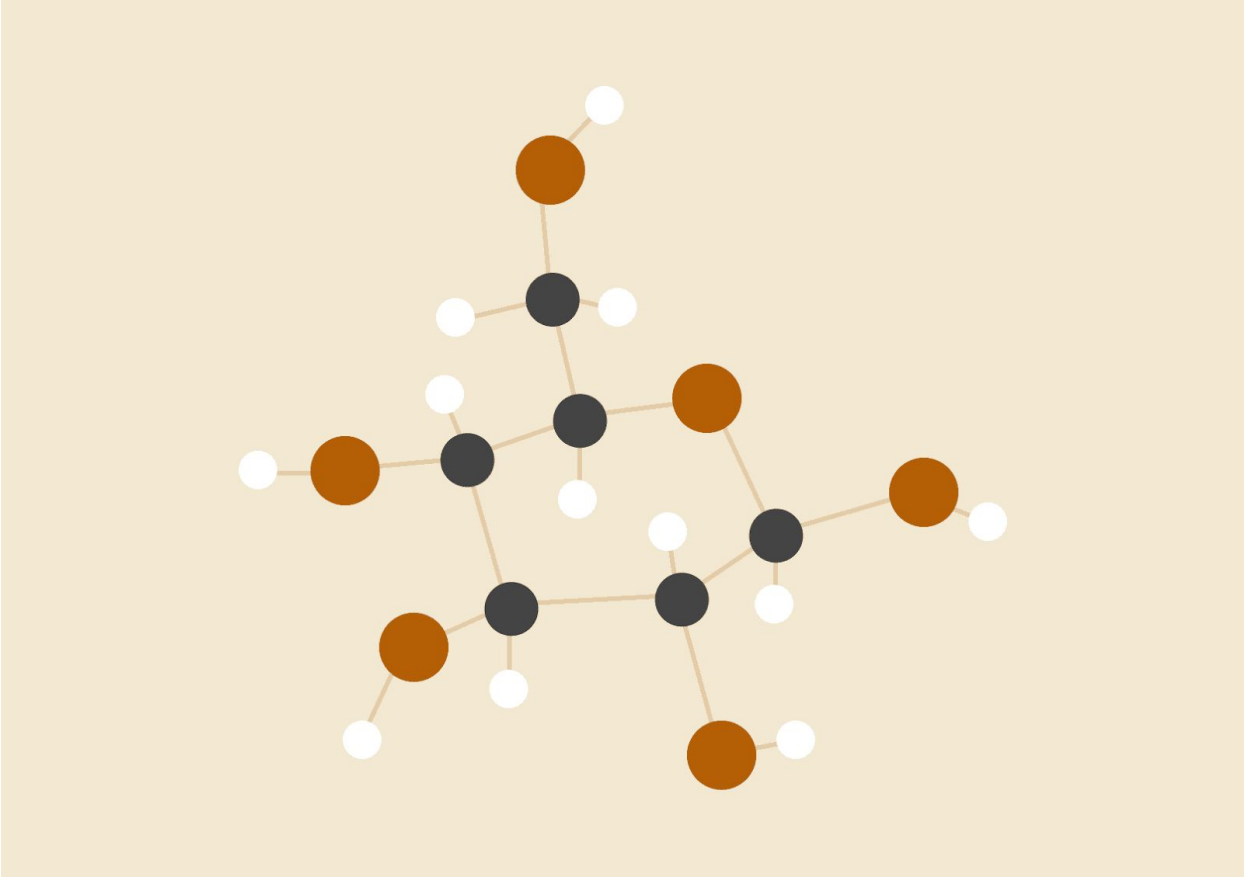
Self Organizing Map



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INTRODUCTION

self-organizing map or self-organizing feature map is a type of artificial neural network that is trained using unsupervised learning to produce a low-dimensional, discretized representation of the input space of the training samples, called a map, and is therefore a method to do dimensionality reduction.

HYPOTHESIS

The principal goal of this project is the implementation of a Kohonen Network as an application, in order to demonstrate its usefulness and explain the concepts of Machine Learning, by means of a converging Self-Organising Map.

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MATERIALS

1. python
2. Look at instructions in this libary for run task

DATA Sample inputs

Data		Color
0000000000 0111111110 0111000110 0111000010 0110000110 0110000110 0110000010 0111100110		Green

0001111100 0000000000		
0000000000 0111111100 0111111110 0110000110 0100000110 0100000110 0111001110 0111111110 0111111100 0000000000		red
...		...

א. באיזה אופן קירבת את התא עליו הוטל קלט מסוים לאותו קלט ובאיזה אופן שונו שכניו?

network consists of connections, each connection providing the output of one neuron as an input to another neuron. Each connection is assigned a weight that represents its relative .importanA given neuron can have multiple input and output connections[1]

ב. האם הגודל המוצע של הרשת מתאים לייצוג אוכלוסיית ספרות זו?

A previously developed method for efficiently simulating complex networks of integrate-and-fire neurons was specialized to the case in which the neurons have fast unitary postsynaptic conductances. However, inhibitory synaptic conductances are often slower than excitatory ones for cortical neurons, and this difference can have a profound effect on network dynamics that cannot be captured with neurons that have only fast synapses. We thus extend the model to include slow inhibitory synapses. In this model, neurons are grouped into large populations of similar neurons. For each population, we calculate the evolution of a probability density function (PDF), which describes the distribution of neurons over state-space. The population firing rate is given by the flux of probability across the threshold voltage for firing an action potential. In the case of fast synaptic conductances

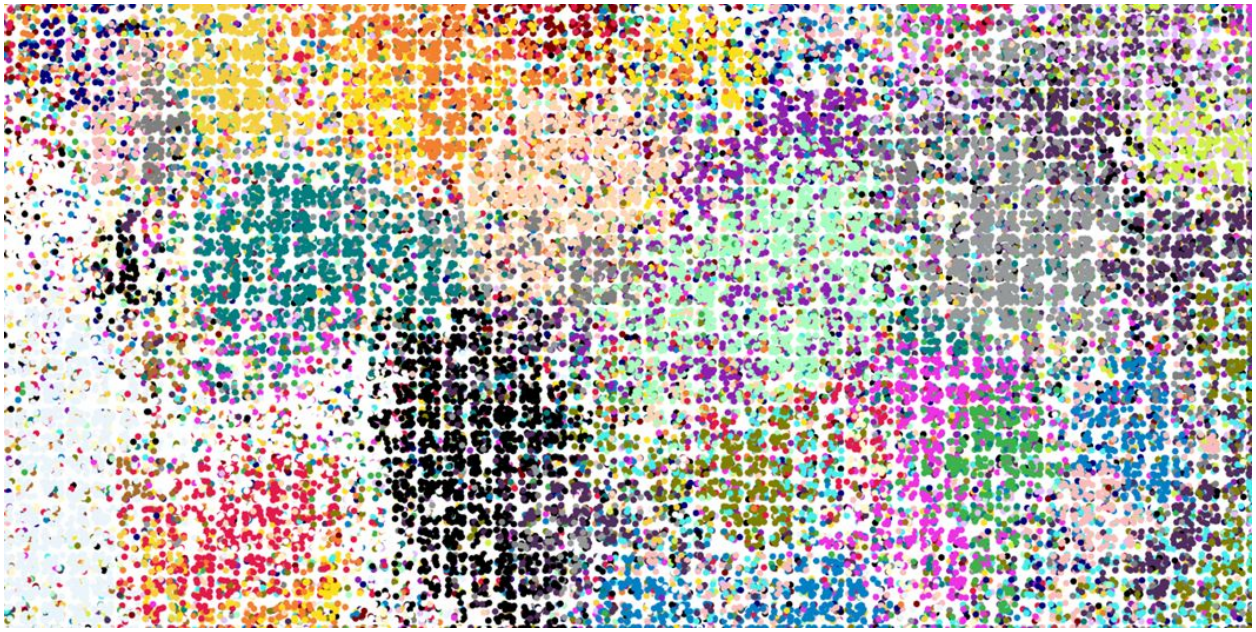
ג. האם זה משנה באיזה סדר מציגים את הספרות למערכת?

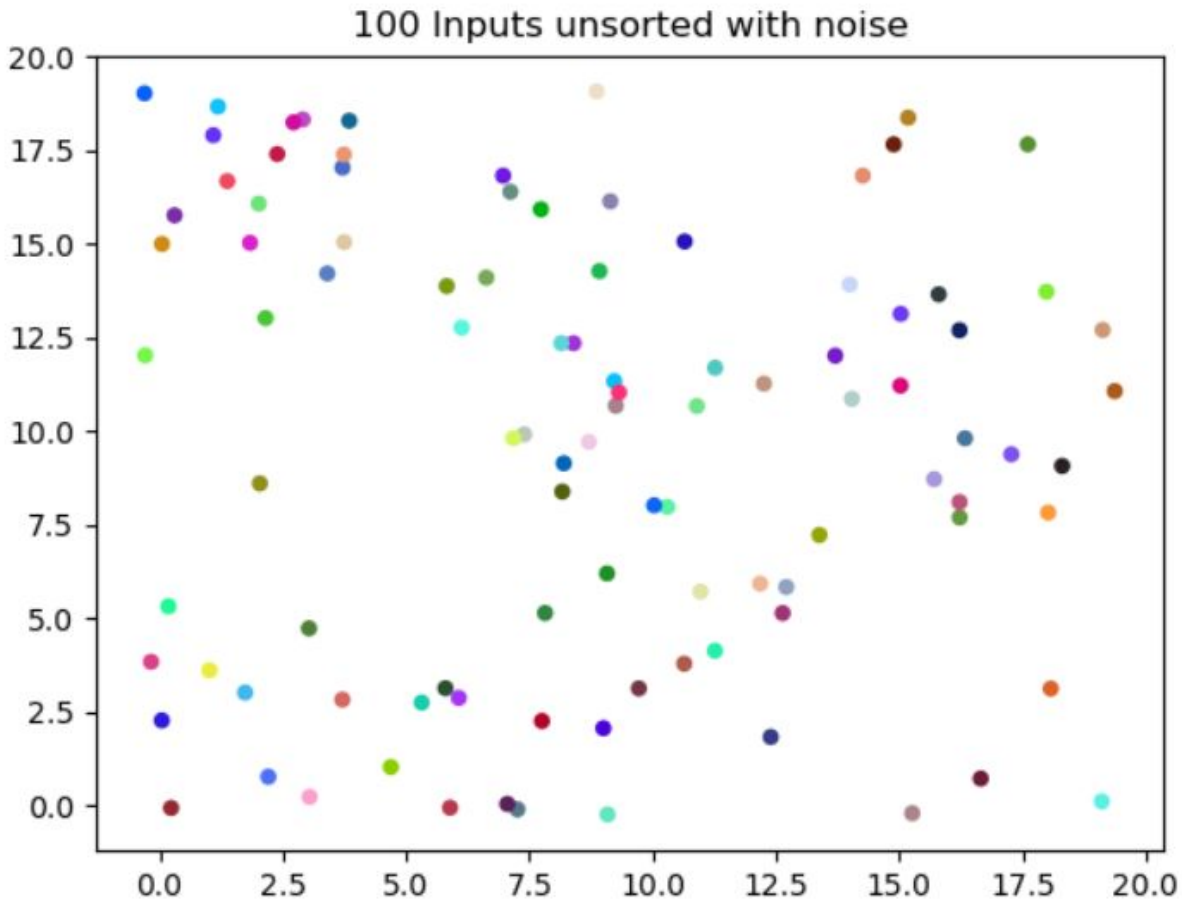
The order in which the inputs enter is insignificant, since the system unsupervised

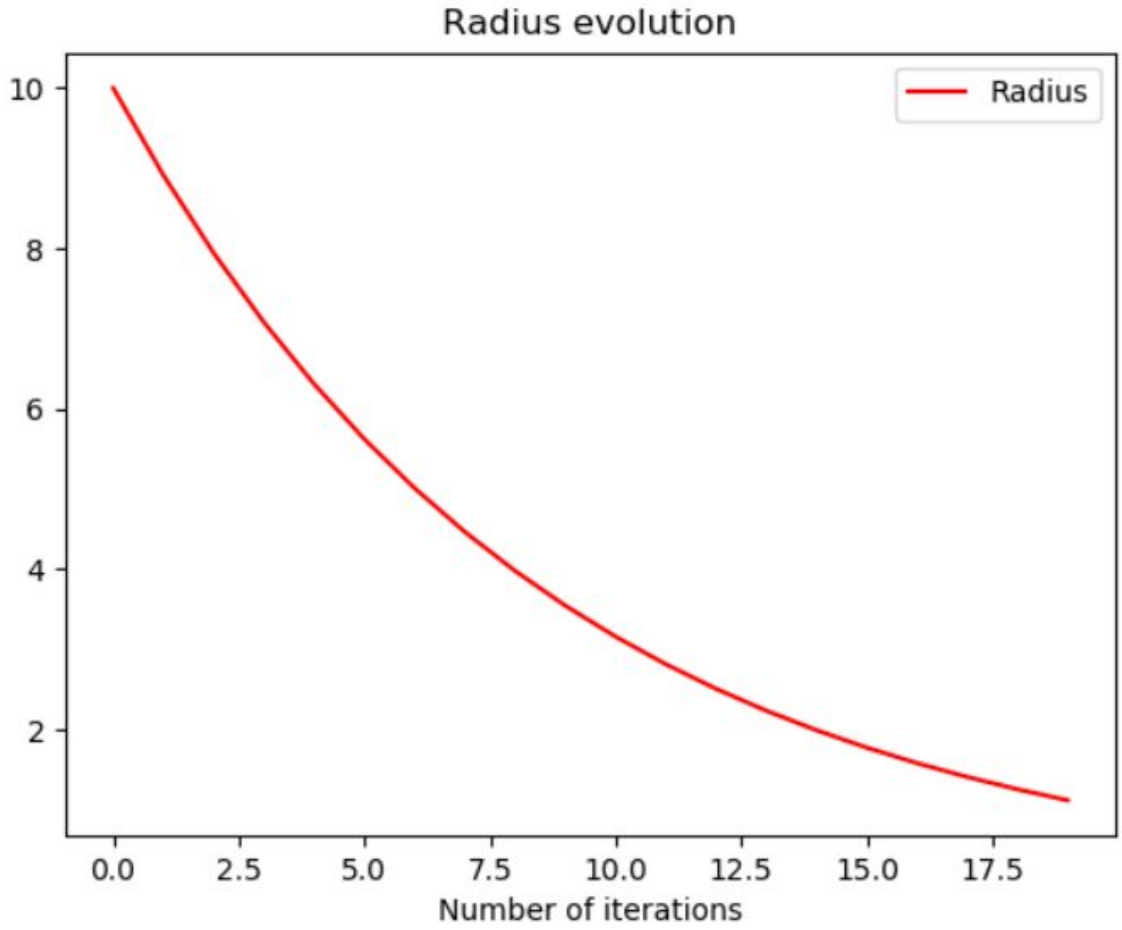
,learning, it is irrelevant to the order in which we enter the various vectors

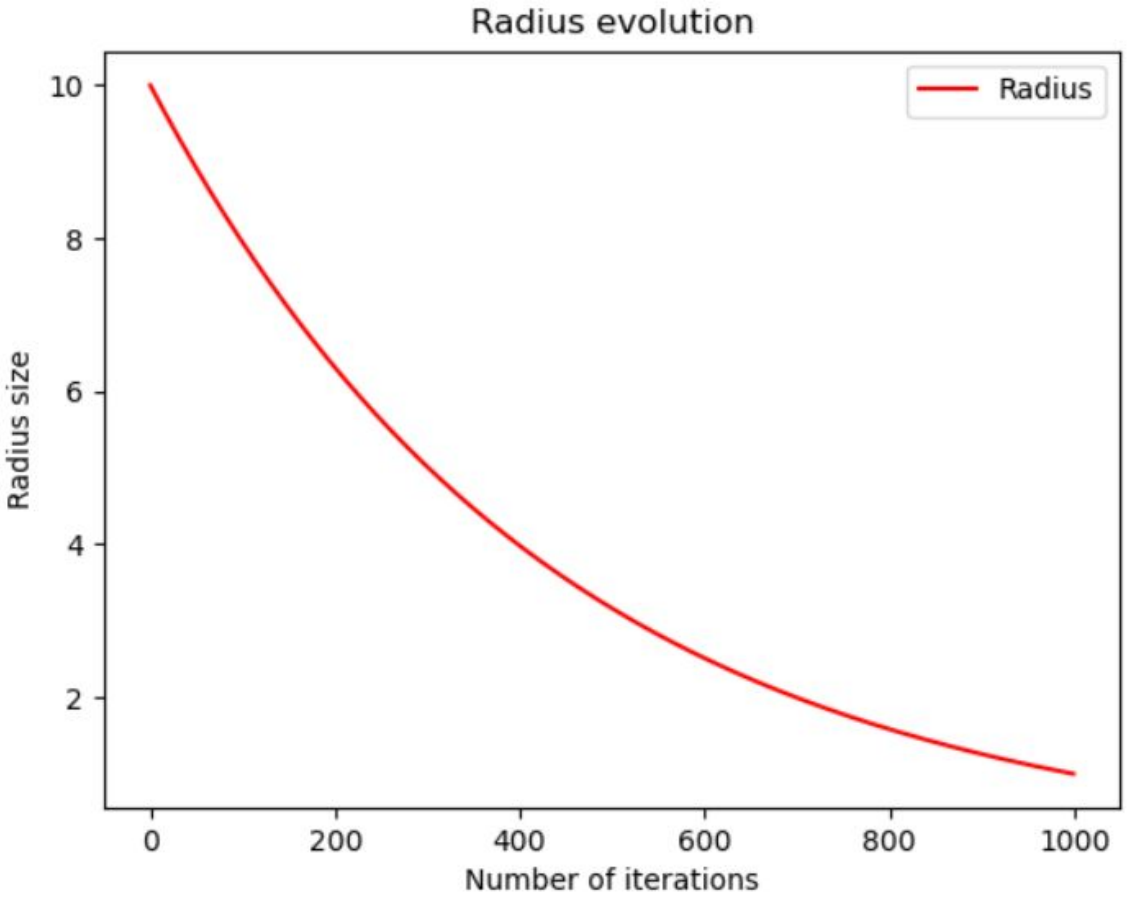
ד. כיצד בחרתם את הפתרון להגשה מבין הפתרונות השונים.

n my opinion, this is the most convenient way to train a network artist, it saves us time and memory with respect to the other methods that can be used and therefore, the Som method and localization and usage have helped to sort out the coordinates of the matrices found in a.csv which we received in the exerciseאDa

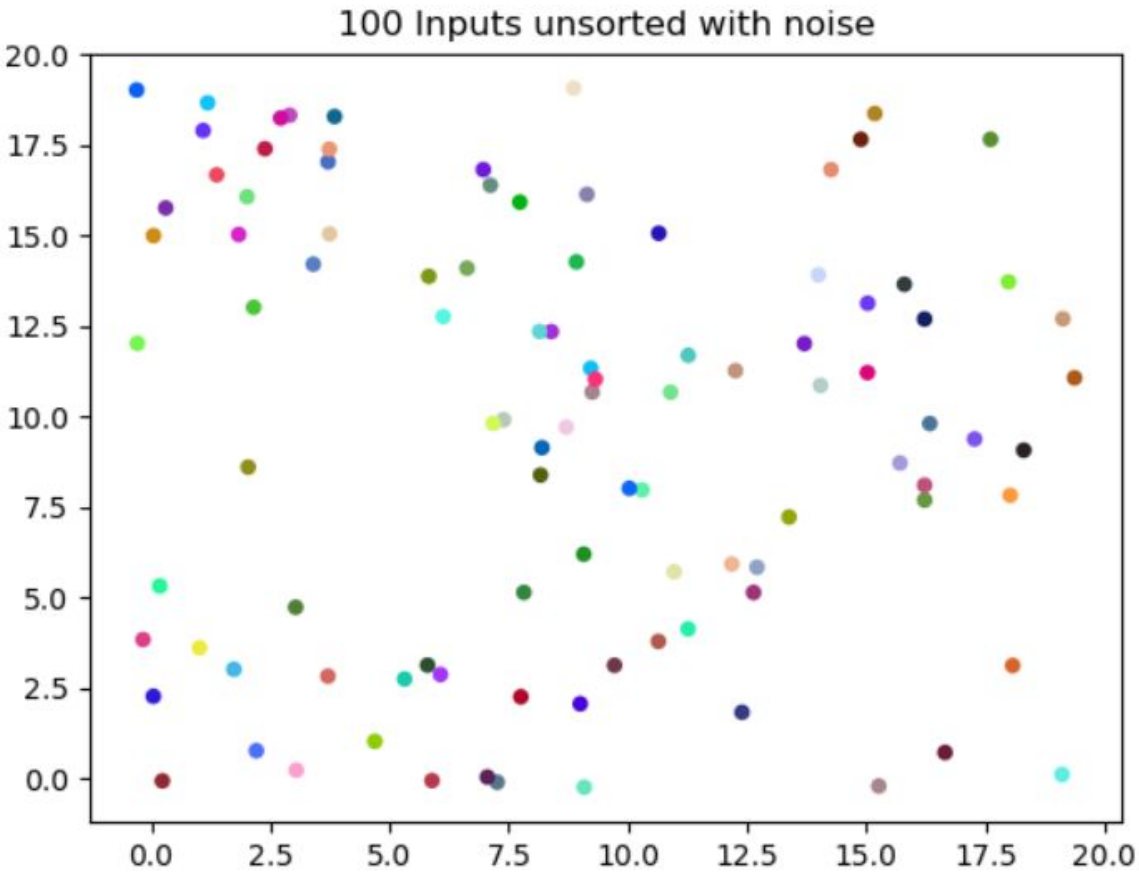



100 Inputs unsorted with noise
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0


Radius evolution
Radius
10
8
6
4
2
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Number of iterations


Radius evolution
Radius
Radius size
Number of iterations
10
8
6
4
2
0
200
400
600
800
1000

RESULTS

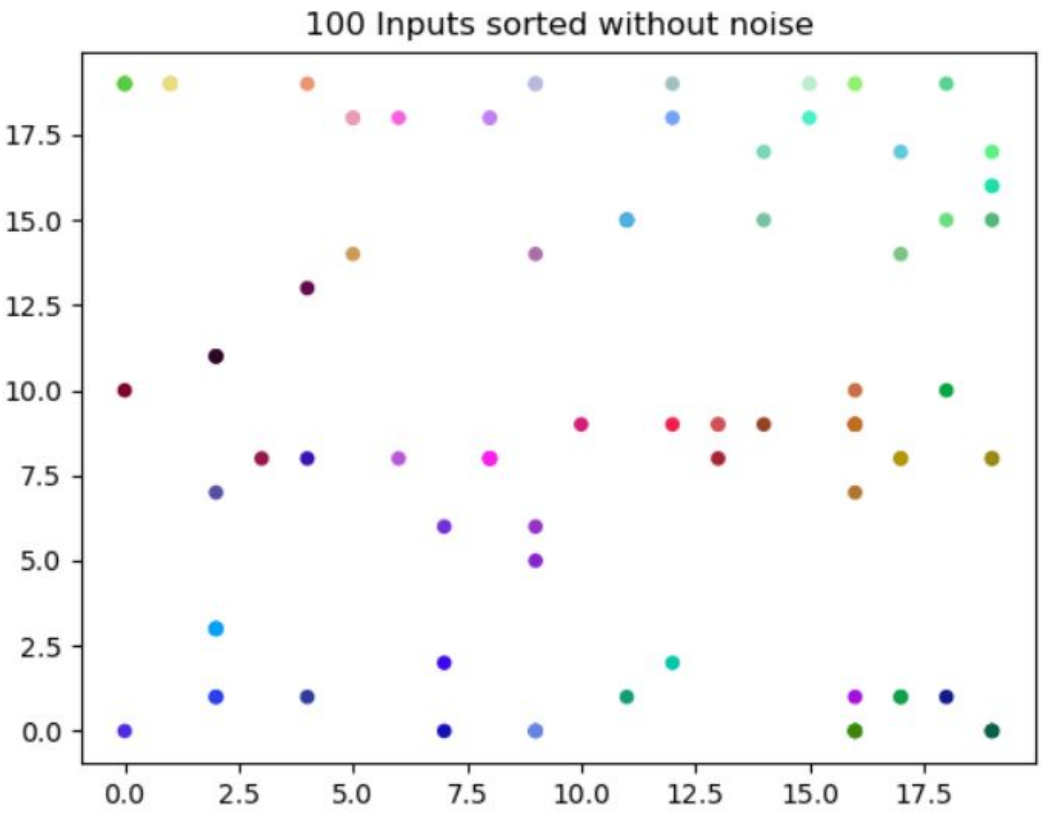


1. Lorem ipsum dolor sit amet

   Here we can see That the program making Self organzing map using Scikit, We can see her k cluster from we can assume on recognize The digit from

bottin to one,

And as well we can see after itearinsos avidance for that



How to run the project file;

instructions :

Python pfile.py -i=100

Running Example