Statistical Theories for Brain and Parallel Computing

Assignment No.1

17M18819

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## Description of Assignment

In assignment 1, we need to construct a probabilistic and binary neural network and then check whether the uniformly generated random number by computer follows the probability.

In addition, we would like to change the  in sigmoid function  to compare the results.

## Solution

I used python to implement this task. I created one class called **ass1** which has the function **testProb(xList,wList,theta,alpha,RAND\_MAX = 2\*\*32-1)** to implement the task described above. Then I called **testProb** 4 times with the same xList, wList, theta but different alpha. I created the form below to show my result clearly.

(The following parameters can be changed by hand when calling function **testProb()**)

*xList = [1.0,1.0,-1.0,-1.0]*

*wList = [3.0,-4.0,2.0,-4.0]*

*theta = 3*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **alpha** | **Ideal number of 1** | **Ideal number of 0** | **Experimental number of 1** | **Experimental number of 0** |
| 1 | 119 | 881 | 113 | 887 |
| 2 | 17 | 983 | 23 | 977 |
| 3 | 2 | 998 | 3 | 997 |
| 4 | 0 | 1000 | 0 | 1000 |

The captured screen of the result of running my program.

