CS 6301 - Machine Learning Lab - Week 6

Date: 08.09.2023

SPOT QUESTIONS

1. An engineer at a semiconductor company wants to model the relationship between the device HFE(y) and three parameters: Emitter-RS (x1), Base RS (x2) and Emitter-to-Base RS (x3). The data are shown in the following table.

X1	X2	X3	y	X1	X2	X3	y
14.620	226.000	7.000	128.400	15.500	230.200	5.750	97.520
15.630	220.000	3.375	52.620	16.120	226.500	3.750	59.060
14.620	217.400	6.375	113.900	15.130	226.600	6.125	111.800
15.000	220.000	6.000	98.010	15.630	225.600	5.375	89.090
14.500	226.500	7.625	139.900	15.380	229.700	5.875	101.000
15.250	224.100	6.000	102.600	14.380	234.000	8.875	171.900
16.120	220.500	3.375	48.140	15.500	230.000	4.000	66.800
15.130	223.500	6.125	109.600	14.250	224.300	8.000	157.100
15.500	217.600	5.000	82.680	14.500	240.500	10.870	208.400
15.130	228.500	6.625	112.600	14.620	223.700	7.375	133.400

(a) Fit a multiple linear regression model to the data.

(b) Predict HFE(y) when x1=14.5, x2=220 and x3=5.0.

2. Solve XOR logic using Multi-Layer Perceptron.

The XOR logic		
X1	X2	Target
0	0	0
0	1	1
1	0	1
1	1	0