|  |
| --- |
| import numpy as np  import matplotlib.pyplot as plt  x=np.array([1,1.5,2,2.5,3,3.5,4,4.5,5,5.25,5.5,5.75,6,6.5,7,7.5,8,8.5,8.75,9])  y=np.array([0,0,0,0,0,0,0,0,0,0,1,1,0,1,1,0,1,1,1,0])  TP=0;  FN=0;  TN=0;  FP=0;  for i in range(20):    if (x[i]<5 and y[i]==1):  FP=FP+1  if (x[i]>5 and y[i]==0):  FN=FN+1  if (x[i]>5 and y[i]==1):  TP=TP+1  print("Confusion Matrix is")  print(TP , FP)  print(FN, TN)  plt.scatter(x,y) |

|  |
| --- |
| Confusion Matrix is  7 0  4 0 |

|  |
| --- |
| p=(1/(1+np.exp(-(x-5))))  d=(p\*(1-p))  print(p)  plt.plot(x,p)  plt.scatter(x,d) |

|  |
| --- |
| [0.01798621 0.02931223 0.04742587 0.07585818 0.11920292 0.18242552  0.26894142 0.37754067 0.5 0.5621765 0.62245933 0.6791787  0.73105858 0.81757448 0.88079708 0.92414182 0.95257413 0.97068777  0.97702263 0.98201379]  Out[10]:  <matplotlib.collections.PathCollection at 0x14fe96431c0> |

|  |
| --- |
| plt.plot(x,p)  plt.scatter(x,y) |

|  |
| --- |
|  |

|  |
| --- |
| grad\_b0new=0  grad\_b1new =0  learning\_rate=0.01  for i in range(100):  for j in range(20):  grad\_b0new=grad\_b0new - (2\*((y[j]-pnew[j])\*pnew[j]\*(1-pnew[j])))  grad\_b1new=grad\_b1new - (2\*((y[j]-pnew[j])\*pnew[j]\*(1-pnew[j])\*x[j]))  b0new=b0new-learning\_rate\* grad\_b0new  b1new=b1new-learning\_rate\* grad\_b1new  print(b0new,b1new)  for k in range(20):  pnew[k]=(1/(1+np.exp(-(b0new+b1new\*x[k]))))  plt.plot(x,pnew)  plt.scatter(x,y,c='r') |

|  |
| --- |
| -17.466210923647957 3.169780682656263  -17.46672294337065 3.1663759554695723  -17.467405461406628 3.161716088123854  -17.468166924702505 3.156280379608969  -17.468901970162865 3.1506210569700364  -17.46950265280989 3.1453046173193187  -17.46986936209784 3.140854521301116  -17.46992031285827 3.137701089029816  -17.46959888427519 3.136142529001368  -17.468878446670445 3.1363191719802006  -17.467764558132476 3.138201702636798  -17.466294513261637 3.141593578031571  -17.46453424468576 3.1461476091773473  -17.462572614441555 3.151396382499071  -17.460513278328104 3.156795375424401  -17.458464598538555 3.1617761046047144  -17.456528469465518 3.1658046846012393  -17.45478928228021 3.1684393979718823  -17.45330443786771 3.1693800145101583  -17.452097730423986 3.1685021042903405  -17.451156565570724 3.1658714471140414  -17.450433425900187 3.1617364463527036  -17.449851366960708 3.156499645661978  -17.449312737909377 3.15067243717939  -17.44870989083843 3.144819262118954  -17.44793646550863 3.1394985619069784  -17.446897940672336 3.135207279306274  -17.445520462668902 3.132334149845694  -17.443757357808483 3.1311250461299722  -17.44159306638963 3.131661940339152  -17.43904442700862 3.1338560148663213  -17.43615930233019 3.1374550264593606  -17.4330125510604 3.142064837671448  -17.429699418300277 3.147184579992227  -17.42632661510922 3.152253838177906  -17.423001696571465 3.156708512277132  -17.419821746053533 3.1600400237925372  -17.41686268879543 3.161850994610837  -17.41417065292856 3.1619001173558097  -17.411756607288126 3.1601299509737935  -17.4095950652518 3.15667363707714  -17.40762704859648 3.1518395543791358  -17.40576687326047 3.146076129649016  -17.403911770676114 3.1399218155747732  -17.401953007681282 3.1339470655859163  -17.399787091725205 3.12869558872764  -17.397325842071794 3.124631255787799  -17.39450447317848 3.1220952283936714  -17.391287224119353 3.121275932108814  -17.38767035386218 3.1221930090189223  -17.383682462083105 3.124695590465926  -17.37938212992809 3.1284749356292254  -17.374852898654062 3.1330912389269194  -17.37019571597227 3.138013744351595  -17.365519236694524 3.1426719522057636  -17.360928741793376 3.1465137913032453  -17.356514828379687 3.1490647057526533  -17.35234327108511 3.149980418139338  -17.34844744592408 3.1490862493758494  -17.34482441410429 3.1463974136577164  -17.34143524759774 3.1421173401478457  -17.338209550030225 3.1366142554690897  -17.33505350688133 3.1303794010960027  -17.33186030908505 3.1239727661763363  -17.32852153958009 3.1179635603807925  -17.324938144364832 3.1128725622706317  -17.32102988615871 3.109122146849904  -17.316742572661795 3.1069978421581603  -17.312052713086068 3.1066234282528558  -17.30696948830605 3.1079503602451193  -17.30153401231119 3.1107617245593926  -17.295815882886256 3.1146907063808404  -17.28990707044704 3.1192531670212493  -17.283913364384244 3.1238929822818062  -17.27794391373445 3.1280371527871873  -17.272099802134576 3.1311556754110086  -17.266462949794363 3.132819436894977  -17.26108678934875 3.1327486855462925  -17.25599003284062 3.1308453603532  -17.2511544467812 3.127204624001707  -17.246526969436832 3.122103907850583  -17.24202585772744 3.1159710490760886  -17.237549963935635 3.109336082634813  -17.232989834228302 3.1027733562280613  -17.228239181862598 3.096841407931778  -17.223205433361933 3.092027387487981  -17.21781839267291 3.0887011098972756  -17.212036468490425 3.087081829255017  -17.20585022678962 3.0872191887777034  -17.19928320187529 3.0889888526788973  -17.192389952419106 3.0921029326699125  -17.185251373400835 3.0961350629196587  -17.177967374475973 3.1005593599116947  -17.17064727759616 3.1048012112409715  -17.163398660935698 3.1082959340611125  -17.156315781210953 3.110549334814676  -17.14946898884742 3.111192845067799  -17.14289658050097 3.110025834245696  -17.136600269373105 3.1070390954977665  -17.130544949014595 3.1024160821839457 |