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Branch:k/k-2

```
import numpy as np
import matplotlib.pyplot as plt

x=[0.5,2.5]
y=[0.2,0.9]
e=[]
weight=[]
bias=[]

def dw(x,y,w,b,c):
  yin=x*w+b
  ynot=sig(yin)
  fdash=ynot*(1-ynot)
  return c*(y-ynot)*fdash*x

def db(x,y,w,b,c):
  yin=x*w+b
  ynot=sig(yin)
  fdash=ynot*(1-ynot)
  return c*(y-ynot)*fdash

def error(x,y,w,b):
  yin=x*w+b
  ynot=sig(yin)
  err=(y-ynot)**2
  return err

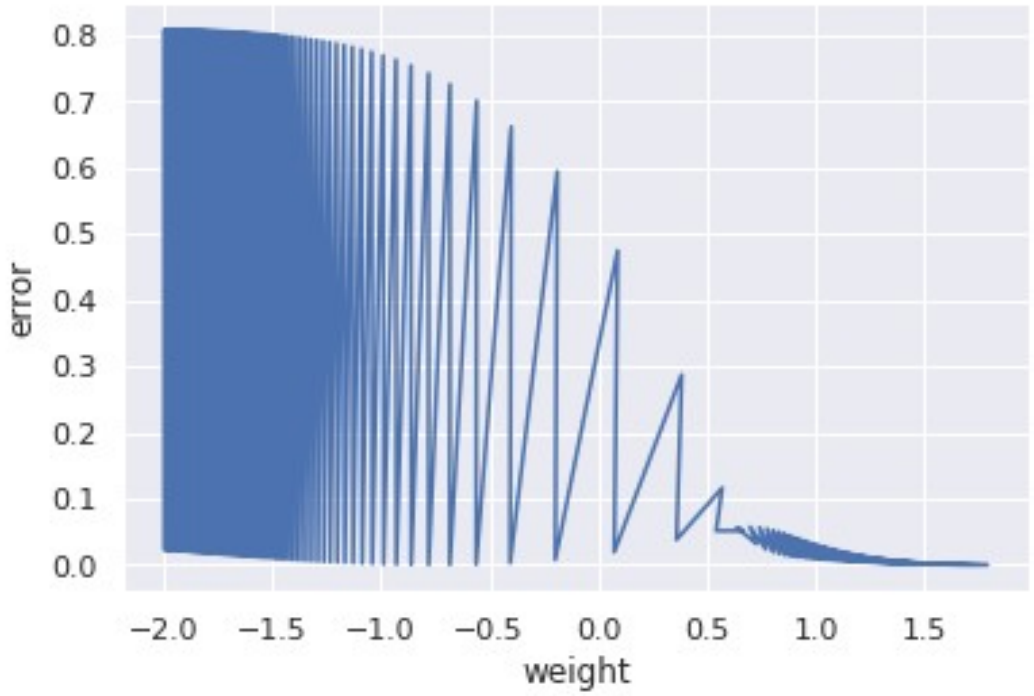
def sig(x): #sigmoid func
 return 1/(1 + np.exp(-x))

def stochastic(x,y,w,b):
  wt=w;
  bi=b;
  c=1;epoch=1000;
  for j in range(epoch):
    for i in range(len(x)):
      wnew=wt+dw(x[i],y[i],wt,bi,c)
      bnew=bi+db(x[i],y[i],wt,bi,c)
      err=error(x[i],y[i],wt,bi)
      e.append(err)
      weight.append(wnew)
```

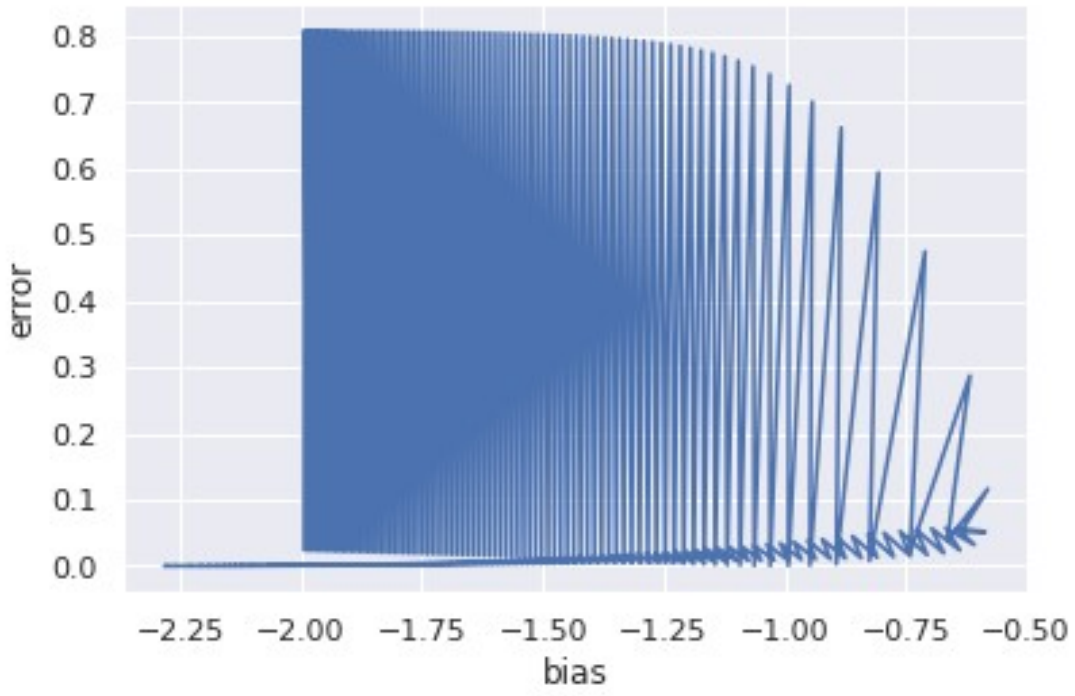
```
        bias.append(bnew)
        wt=wnew
        bi=bnew
        print(wnew)
        print(bnew)


stochastic(x,y,-2,-2)
```

```
xpoints = np.array(weight)
ypoints = np.array(e)
plt.ylabel("error")
plt.xlabel("weight")
plt.plot(xpoints, ypoints)
plt.show()
```




```
xpoints = np.array(bias)
ypoints = np.array(e)
plt.ylabel("error")
plt.xlabel("bias")
plt.plot(xpoints, ypoints)
plt.show()
```




```
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
from mpl_toolkits.mplot3d import Axes3D


sns.set(style = "darkgrid")

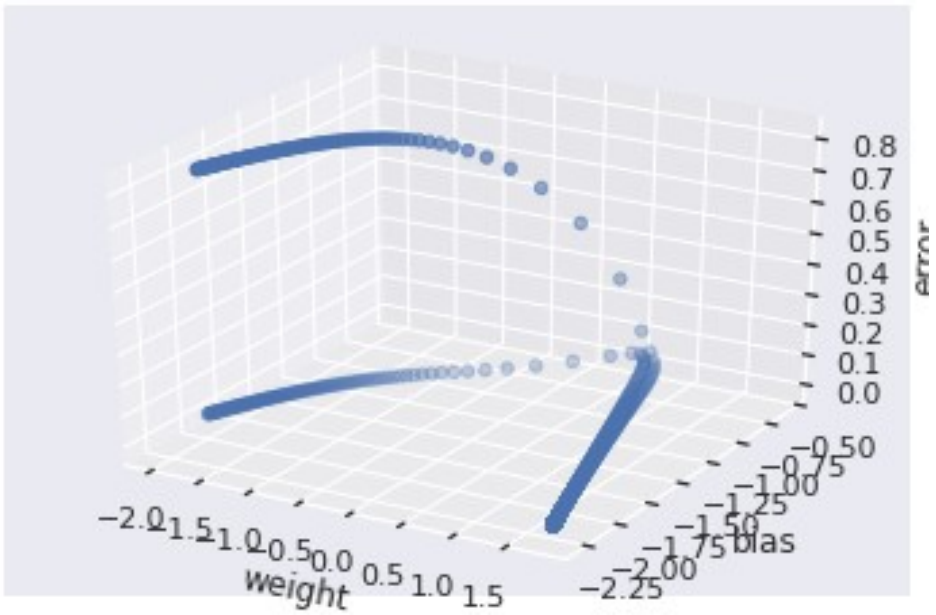
fig = plt.figure()
ax = fig.add_subplot(111, projection = '3d')

x = weight
y = bias
z = e

ax.set_xlabel("weight")
ax.set_ylabel("bias")
ax.set_zlabel("error")

ax.scatter(x, y, z)

plt.show()
```



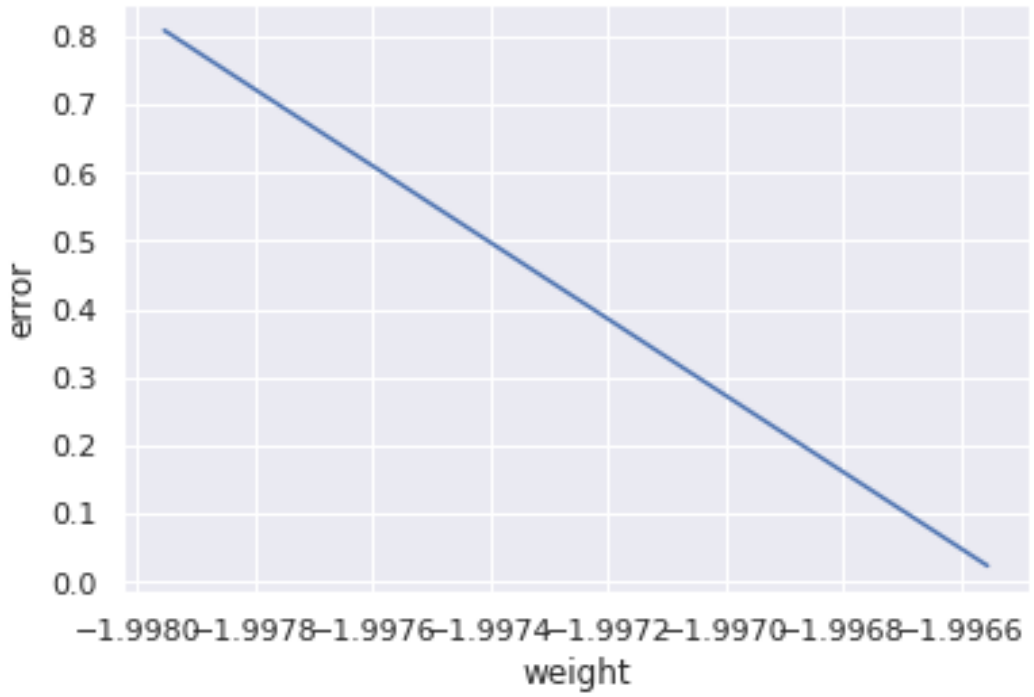

```
x=[0.5,2.5]
y=[0.2,0.9]
e=[]
weight=[]
bias=[]

def batch(x,y,w,b):
  wt=w;
  bi=b;
  c=1;epoch=1000;
  for j in range(epoch):
    for i in range(len(x)):
      wnew=wt+dw(x[i],y[i],wt,bi,c)
      bnew=bi+db(x[i],y[i],wt,bi,c)
      err=error(x[i],y[i],wt,bi)
      e.append(err)
      weight.append(wnew)
      bias.append(bnew)
  print(sum(weight)/2000)
  print(sum(bias)/2000)

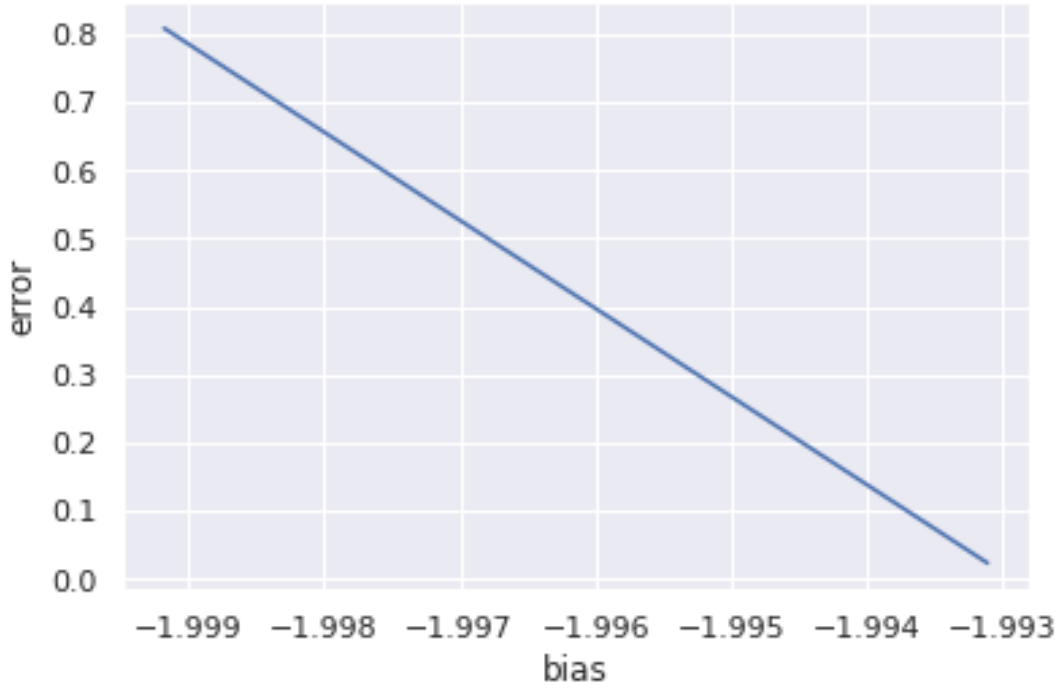
batch(x,y,-2,-2)
```

```
-1.9972538403921953
-1.9961444203923415
```

```
xpoints = np.array(weight)
ypoints = np.array(e)
plt.ylabel("error")
plt.xlabel("weight")
plt.plot(xpoints, ypoints)
plt.show()
```




```
xpoints = np.array(bias)
ypoints = np.array(e)
plt.ylabel("error")
plt.xlabel("bias")
plt.plot(xpoints, ypoints)
plt.show()
```



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from mpl_toolkits.mplot3d import Axes3D


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fig = plt.figure()
ax = fig.add_subplot(111, projection = '3d')

x = weight
y = bias
z = e

ax.set_xlabel("weight")
ax.set_ylabel("bias")
ax.set_zlabel("error")

ax.scatter(x, y, z)

plt.show()
```