

Deep learning & applications

Practice#1

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Due:

Task: binary classification using logistic regression (cross-entropy loss)

Input: 2-dim vector, $\mathbf{x} = \{x_1, x_2\}$

Output: label of the input, $\mathbf{y} \in \{0,1\}$

Pseudo code

Step 1. Generate 1000(=m) train samples, 100(=n) test samples:

```
x1_train=[], x2_train=[], y_train=[]  
for i in range(m):  
    x1_train.append(random.randint(-10, 10))  
    x2_train.append(random.randint(-10, 10))  
    if x1_train[-1] + x2_train[-1] > 0:  
        y_train.append(1)  
    else:  
        y_train.append(0)  
x1_test=[], x2_test=[], y_test=[] #generate 100 test samples!
```

Step 2. Update w_1, w_2, b with 1000 samples for 100 iterations: #100 grad updates!

Step 2-1. print w_1, w_2, b at each iteration

Step 2-2. calculate the cost with m train samples!

Step 2-3. calculate the cost with n test samples!

Step 2-4. print accuracy with m train samples! (display the number of correctly predicted outputs/1000*100)

Step 2-5. print accuracy with n test samples! (display the number of correctly predicted outputs/100*100)