CSAL4243

Introduction to Machine Learning

Quiz 1

Each question carry same marks. Consider all models are linear regression with one variable and mean squared error as cost function.

1. Predict whether there will be rain tomorrow or not from previous whether data is a regression problem. Yes/No and why ?

Ans: No, because predicting whether there will be rain tomorrow or not is a binary classification problem. Regression problems have real valued outputs.

2. We trained a linear regression model using house size as only feature and the resulting model is h(x) = 25x + 450. For a sample house of size 100 square feet the given price is $3000. What is the error in our prediction of this house using the model. Is it a good model. Yes/No and why ?

Ans: Yes, because the error |h(x) - y| which in this case is only $50 is small compared to hourse price. If you said No and justified it by stating that error is large as you want to have less error than this, it is still fine.

3. Someone gave you code for linear regression with gradient descent. On the first iteration you get a cost of -12.4 and at the end of 1000 iterations you got -100.3. Is the code working properly? Yes/No and why ?

Ans: No, because Linear Regression cost function can not have -ve value.

4. Brute force Linear Regression will give you a global optimal value of parameters. Yes/No and why ?

Ans: Yes, because in brute force we are checking every value of our parameters for cost. Hence we can find the lowest cost and global optimal parameters.

5. If parameter update equation of gradient descent is changed to the following equation, it would still result in same output. Yes/No and why?

$$\theta = \theta + \alpha \frac{\partial}{\partial \theta} J(\theta)$$

Ans: No, because it would take theta in opposite direction, result in increase of cost instead.