Semi-final Project ML 2021

K-Vector 21 Machine Learning workshop

Objective

The objective of this project is to get your hands on machine learning for what you have taken until now.

Requirements

In order to work on this project, it will be much easier for you if you study the following topics:

1. Linear Regression (One variable and multivariate), hypothesis function, cost function, and gradient descent.
2. Feature selection and feature scaling.
3. Logistic Regression (single classification and multiclass classification), sigmoid function, cost function, and gradient descent.
4. Underfitting, overfitting, and regularization.

You have to understand Python libraries:

1. NumPy
2. matplotlib
3. Pandas

At least you have to run the code of the previously mentioned Python libraries that is explained in the first three sessions and see the results by yourself.

Project description

You will work in teams of 2-3 members.

Predict Possibility of Heart Attack

You are given a database for patients with their information about their heart. The "target" field refers to the presence of heart disease in the patient. It is integer-valued 0 = no/less chance of heart attack and 1 = more chance of heart attack.

Task Details

You are required to build a machine learning model to predict the possibility of a heart attack.

You need to build the following functions for your code:

1. Read the dataset using Pandas
2. Feature scaling
3. Feature selection
4. Split the dataset into a training set and test set
5. Sigmoid/ Hypothesis function
6. Cost function
7. Gradient descent
8. Regularization
9. Visualize results (you can use matplotlib)

Evaluation

The evaluation criteria in this project is on the accuracy and time (hint: you can use NumPy and vectorization for that) you would obtain compared to the other teams.

The project is evaluated out of 100 points. The previously mentioned functions in the section above are 90/100, and there is 10/100 bonus for the earlier submissions or the organization of the code and comments.

Submission

Please provide your code with comments.

The deadline for submitting the project is 14 days after the post.