

EstimateX Application Manual

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SC205 Application Project, Semester 2, DAIICT

1 Welcome to EstimateX !!

One encounters the problem of estimating an outcome at every point of time. In fact, it is a very essential part of decision making. Our brain makes a decision after estimating the outcome of all possible decisions. The problems related to estimation are everywhere. A doctor has to make an estimation of what disease a patient might be suffering from based on the symptoms. Even weather forecasting consists of an estimation based on a wide range of parameters. Price of a house needs to be estimated before buying or selling, in order to avoid attaining a loss. We can estimate the volume of an object based on its dimensions as the parameters of our estimation.

2 What can EstimateX do for you??

EstimateX is about using an algorithm to perform the process of estimation for the user. For example, let us assume that you want to sell your house that is in the main city of Ahmedabad and you are not aware of the current market price of your house. Now here, let us assume that the price of a house depends only on the size (area) of the house. If you can provide the sizes and prices of some random houses of your area that were recently sold, to the machine, then it can process over the data that you provided and generate a hypothesis (formula) that can estimate the prices of any house that is in your area if you provide its size as the input. The machine is not restricted to perform for a single parameter, it can work for any number of parameters. Expanding the same example of house prices, we can further say that the parameters for the price estimation can be size, number of floors, number of bedrooms, distance from the main city, age of the house, etc. Another example can be of weather forecasting. Weather Forecasting is also an estimation process to predict the weather. It depends on a lot of parameters such as the speed of the wind, temperature, humidity, relative pressure with the surrounding areas etc. If the machine is provided with a large training set of

the examples having these parameters and their respective resulting weather, then the machine can process over the data and learn how to predict the weather accurately based on these parameters. A lot of estimation process is required to take decisions related to Share Markets. One has to decide whether to hold on to his shares or sell them in order to attain maximum profit or bare minimum loss.

3 How to use EstimateX??

This application accepts a training set from the user in text format and then processes the input data as show above. After the process it generates a hypothesis that can be used for estimation. User can also provide a set of parameters to be inserted in the hypothesis and the application will provide user with the estimated value for those parameters.

For example as mentioned above you want to estimate the price of your house but this time let us assume that the price depends upon two parameters the size (area) of the house as well as the number of floors. Assuming you have a training set of 5 training examples to perform this estimation. You need to provide your input in the following format to the application.

Hsize₁, Hfloors₁, Hprice₁;
Hsize₂, Hfloors₂, Hprice₂;
Hsize₃, Hfloors₃, Hprice₃;
Hsize₄, Hfloors₄, Hprice₄;
Hsize₅, Hfloors₅, Hprice₅;

For example,

150, 2, 2000000;
 175, 1, 1050000;
 100, 2, 890000;
 200, 1, 1500000;
 50, 3, 1800000;

EstimateX

150, 2, 2000000;
175, 1, 1050000;
100, 2, 890000;
200, 1, 1500000;
50, 3, 1800000;

Power of estimation : 1

Please enter the data for the estimation in the format mentioned in the application

Hypothesis :

Estimated Value :

ESTIMATE

PLOT HYPOTHESIS

After you have provided the training set to the application, you need to provide a set of parameters (your query) to the application if any, in the same format that we followed in the training set. Also you need to select the power of estimation. I have selected it to be 1. You can select any power from 1 to 10. **NOTE : Higher power gives rise to the problem of 'Overfitting'.** Because of this problem, the hypothesis will give very accurate output for the training sets, but it will not give appropriate output for other queries.

Hsize, Hfloor;

For example,

250, 1;

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150, 2, 2000000;
175, 1, 1050000;
100, 2, 890000;
200, 1, 1500000;
50, 3, 1800000;

Power of estimation : 1

250, 1;

Hypothesis :

Estimated Value :

ESTIMATE

PLOT HYPOTHESIS

After you have provided all the inputs to the application, you will have to click the **Estimate Button** in order to generate a hypothesis. As soon as you click on the **Estimate Button**, you will see the hypothesis polynomial as well as the estimated value of the query on your screen.

EstimateX

150, 2, 2000000;
175, 1, 1050000;
100, 2, 890000;
200, 1, 1500000;
50, 3, 1800000;

Power of estimation : 1

250, 1;

Hypothesis :
-4234999.999982523
+ 1630555.5555508472 * x1^1
+ 20355.55555489813 * x0^1

Estimated Value :
2484444.4444407774

ESTIMATE

PLOT HYPOTHESIS

Here we have used two parameters, but if you use only one parameter to estimate the value you can also plot the graph of the hypothesis on a Cartesian plane. I have also provided a sample training set that you can set as your input from the menu button of the application.

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Sample Training Set
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5.0269, -2.6807;
5.0365, 5.7014;
5.0546, 3.8166;
5.0594, 2.8214;
5.0702, 5.1337;
5.1077, 2.0576;
5.1301, 0.5608;
5.1793, -0.7428;
5.1884, 0.0042;

Power of estimation : 1

Please enter the data for the estimation in the format mentioned in the application

Hypothesis :
-3.8957804088879384
+ 1.1930335866607418 * x0^1

Estimated Value :

ESTIMATE

PLOT HYPOTHESIS

After entering the sample training set or any other single parameterized training set and estimating its hypothesis, you can use the plot hypothesis feature of the application using the Plot Hypothesis button.

