

Activity Sheet

Objective:

After solving these exercises, you should be able to understand how to extract features using deeplearning in R and also build the deep learning model in R.

1. **Extract features using deeplearning and build the model using all the features including the new features**
2. **Building the model using important attributes.**

1. What are the critical points (maxima and/or minima) of the following function? Determine whether they are maxima or minima points

$$F(x) = X^2 - 6X - 3$$

$$\text{First derivative} = 2X - 6$$

$$2X - 6 = 0 \Rightarrow 2X = 6 \Rightarrow X = 3$$

$$\text{Second derivative} = 2, \text{ it is +ve value and hence it has minima and the point is at } x = 3$$

$$\text{ie., } f(x) = 3^2 - 6 \cdot 3 - 3 = 9 - 18 - 3 = -12. \text{ Hence at the point } (3, -12), \text{ the function has minima}$$

Assignment :

Find the critical points for $f(x) = -4X^2 + 4X + 13$

2. **R implementation of**
 - a. **Lasso regression,**
 - b. **Ridge regression**
 - c. **Elastic Regression**
3. **DeepLearning**
 - a. The dataset `germandata.csv` is provided for deep learning activity. The attribute "V21" is the target attribute. Use H2o library and extract 50 new features. Consider all the features and build deepLearning Model
 - b. Extract top 20 important attributes using randomforest model.
 - c. Build DeepLearning model gain using important attributes.
 - d. Build NaiveBayes Model using important attributes