Neural Network

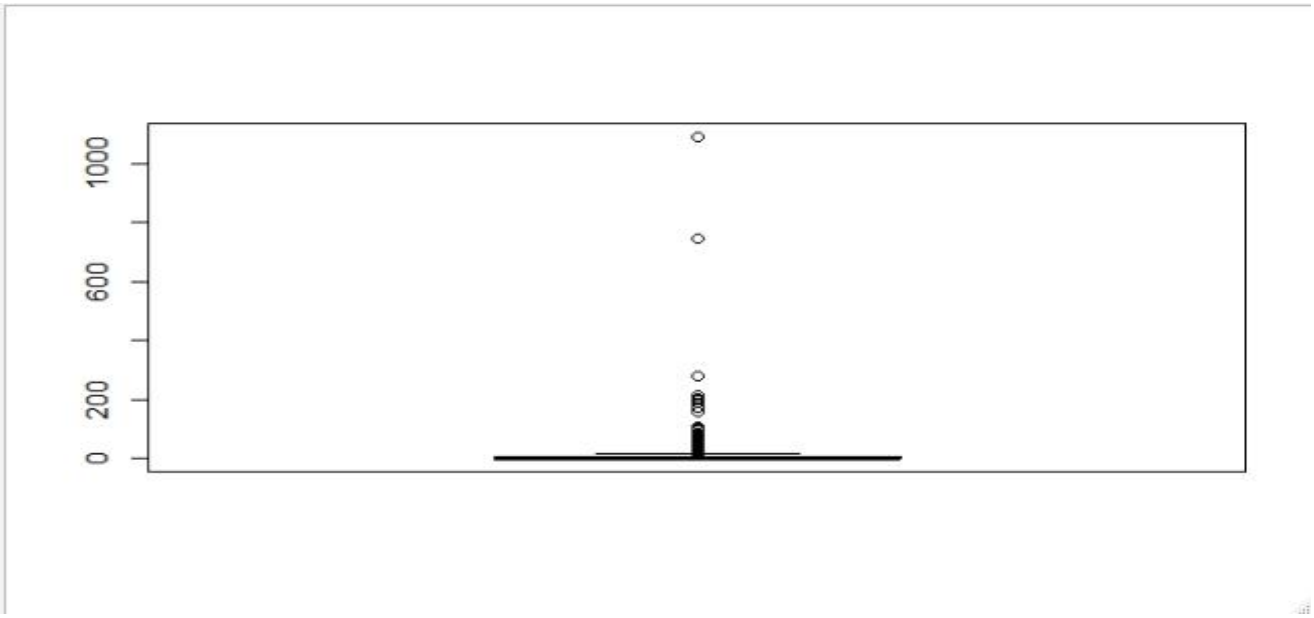
Example- Fire Forest dataset

```
data.frame':    517 obs. of  31 variables:
 $ month        : Factor w/ 12 levels "apr","aug","dec",..: 8 11 11 8 8 2 2 2
12 12 ...
 $ day          : Factor w/ 7 levels "fri","mon","sat",..: 1 6 3 1 4 4 2 2 6
3 ...
 $ FFMC         : num  86.2 90.6 90.6 91.7 89.3 92.3 92.3 91.5 91 92.5 ...
 $ DMC          : num  26.2 35.4 43.7 33.3 51.3 ...
 $ DC           : num  94.3 669.1 686.9 77.5 102.2 ...
 $ ISI          : num  5.1 6.7 6.7 9 9.6 14.7 8.5 10.7 7 7.1 ...
 $ temp         : num  8.2 18 14.6 8.3 11.4 22.2 24.1 8 13.1 22.8 ...
 $ RH           : int  51 33 33 97 99 29 27 86 63 40 ...
 $ wind         : num  6.7 0.9 1.3 4 1.8 5.4 3.1 2.2 5.4 4 ...
 $ rain         : num  0 0 0 0.2 0 0 0 0 0 0 ...
 $ area         : num  0 0 0 0 0 0 0 0 0 0 ...
 $ dayfri       : int  1 0 0 1 0 0 0 0 0 0 ...
 $ daymon       : int  0 0 0 0 0 0 1 1 0 0 ...
 $ daysat       : int  0 0 1 0 0 0 0 0 0 1 ...
 $ daysun       : int  0 0 0 0 1 1 0 0 0 0 ...
 $ daythu       : int  0 0 0 0 0 0 0 0 0 0 ...
 $ daytue       : int  0 1 0 0 0 0 0 0 1 0 ...
 $ daywed       : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthapr     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthaug     : int  0 0 0 0 0 1 1 1 0 0 ...
 $ monthdec     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthfeb     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthjan     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthjul     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthjun     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthmar     : int  1 0 0 1 1 0 0 0 0 0 ...
 $ monthmay     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthnov     : int  0 0 0 0 0 0 0 0 0 0 ...
 $ monthoct     : int  0 1 1 0 0 0 0 0 0 0 ...
 $ monthsep     : int  0 0 0 0 0 0 0 0 1 1 ...
 $ size_category: Factor w/ 2 levels "large","small": 2 2 2 2 2 2 2 2 2 2 ...
```

From above data frame 3 variables are factor and remaining all are numeric.

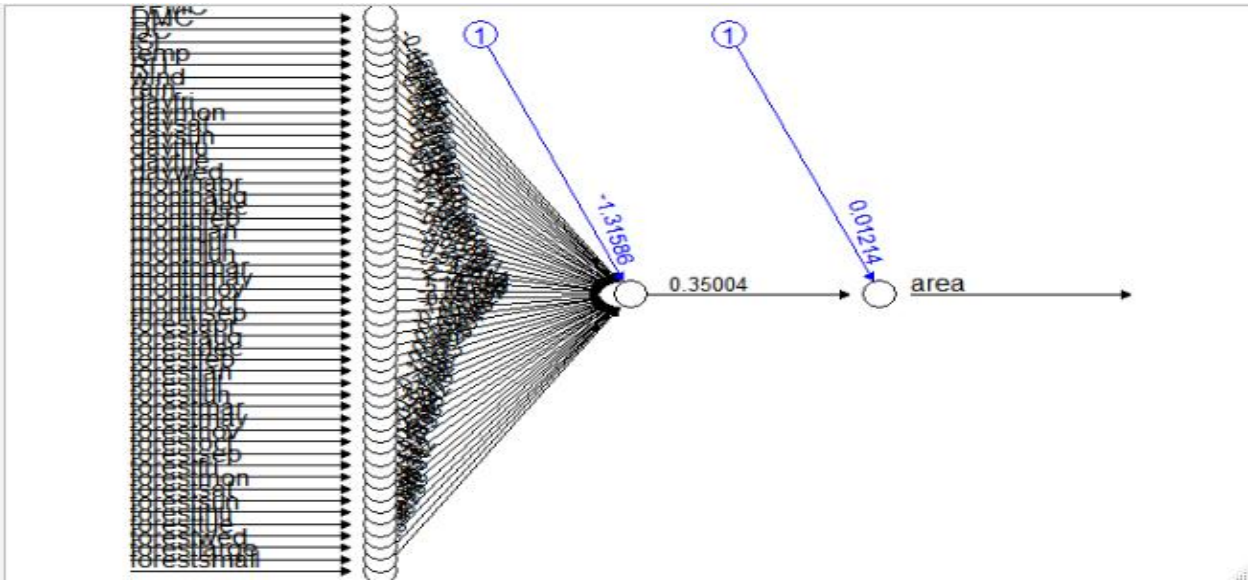
Our target variable area is numeric is nature.

Box Plot ➔



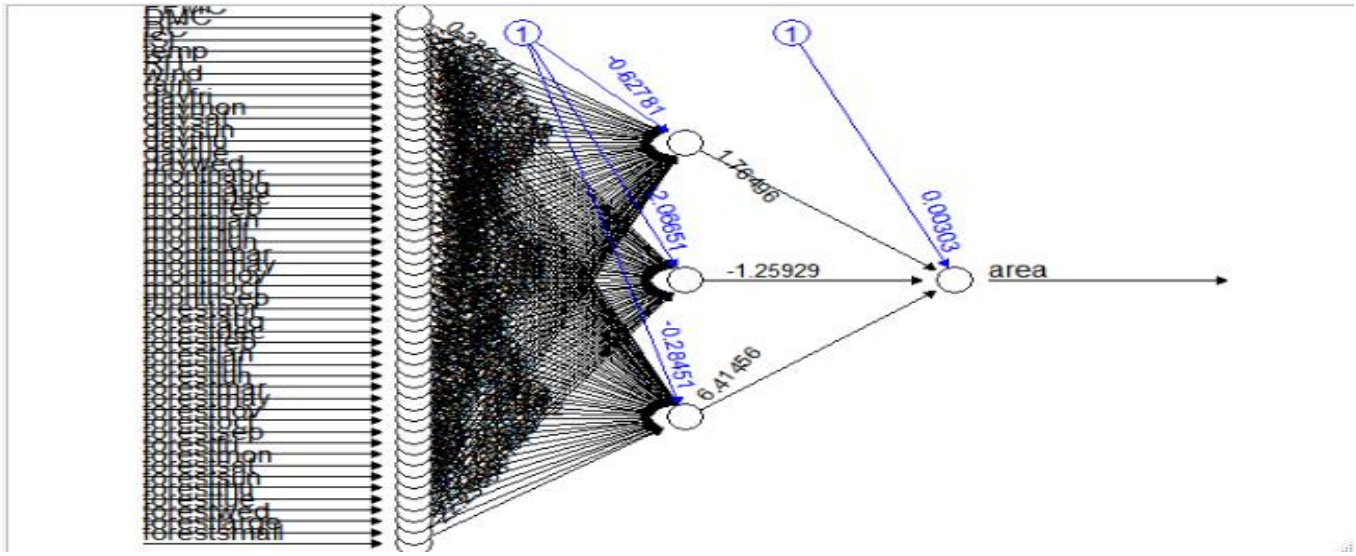
Our target variable is area so ignoring outliers.

Model-1 ➔

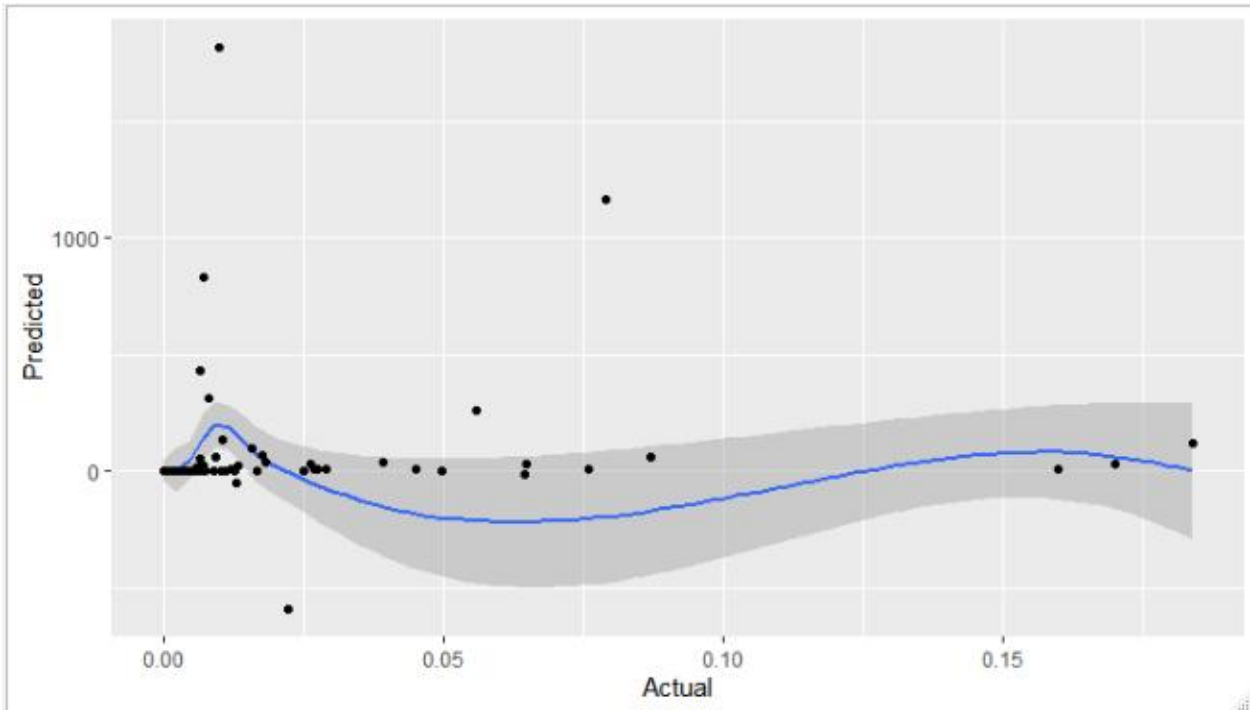


In this model we have not considered hidden layers. We are getting very low accuracy as 0.17, so we will consider hidden layers in next model.

Model-2 ➔



In this model we are getting lesser accuracy as 0.13 as compared to model-1.



Model-3 ➔

Hidden layers = 5 then again getting lesser accuracy as 0.042