

HW8 - DATA 609

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```
library(nnet)
```

Ex. 1 – Use the *nnet* package to analyze the *iris* dataset. Use 80% of the 150 samples as the training data and the rest for validation. Discuss the results.

```
set.seed(1212)

train_index <- sample(seq_len(150), size = 120) #generate random index separating iris into speci
fied samples
train <- iris[train_index,] #training data
test <- iris[-train_index,] #test data

test_cat <- iris[-train_index, 5] #true designations for test

iris_m <- nnet(formula = Species ~., data = iris, size = 1) #size is the number of units in the
hidden layer
```

```
## # weights: 11
## initial value 162.824356
## iter 10 value 50.964172
## iter 20 value 15.565706
## iter 30 value 7.675196
## iter 40 value 6.366598
## iter 50 value 5.978327
## iter 60 value 5.973796
## iter 70 value 5.963804
## iter 80 value 5.963678
## iter 90 value 5.963136
## final value 5.962275
## converged
```

```
iris_predict <- predict(iris_m, test, type = 'class')
```

```
100*round(table(iris_predict, test_cat)/30,3)
```

```
##           test_cat
## iris_predict setosa versicolor virginica
##   setosa      36.7         0.0         0.0
##   versicolor   0.0        40.0         0.0
##   virginica    0.0         0.0        23.3
```

Using only 1 hidden layer, the neural net model generated by nnet offers a very accurate model.