



ANN in R

Let's take a look at ANN's in R. The 'neuralnet' package works nicely and has a nice visual representation of the ANN's built.

We will start building a neural network for classifying Iris flowers.



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Train our ANN

```
# load our data set
data(iris)

# make sure the ANN library is available
library(neuralnet)

# convert the labels into numeric labels and put them into a data frame
Species.numeric <- as.numeric(iris$Species)
iris.df <- data.frame(iris,Species.numeric)

# train a neural network with two hidden nodes
net <- neuralnet(
  Species.numeric ~ Sepal.Width+Sepal.Length+Petal.Width+Petal.Length,
  iris.df,
  threshold=0.01,
  stepmax="10000",
  lifesign="none",
  hidden=2)
```

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The data set:

```
> iris.df[1:5,]
  Sepal.Length Sepal.Width Petal.Length Petal.Width Species Species.numeric
1          5.1          3.5          1.4          0.2  setosa              1
2          4.9          3.0          1.4          0.2  setosa              1
3          4.7          3.2          1.3          0.2  setosa              1
4          4.6          3.1          1.5          0.2  setosa              1
5          5.0          3.6          1.4          0.2  setosa              1
> levels(iris.df$Species)
[1] ``setosa``      ``versicolor``  ``virginica``
```



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Evaluate our ANN

```
# display the ANN
plot(net)

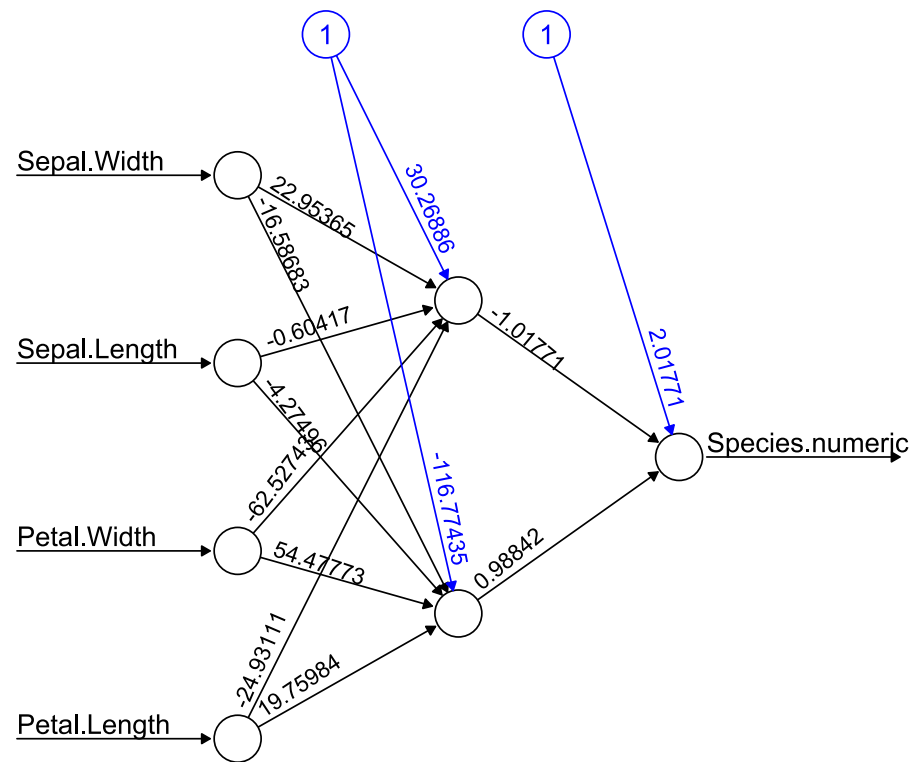
# the training predictions from the ANN are numeric values,
# turn them into labels by rounding
predicted.labels <- round(net$net.result[[1]])

# plot the confusion matrix
print(table(iris.df$Species.numeric,predicted.labels))
```

The Confusion Matrix

```
predicted.labels
  1  2  3
1 50  0  0
2  0 49  1
3  0  1 49
```

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Error: 0.839655 Steps: 90430