Data Set:

We have iris dataset with 120 training data and 30 test data rows. For each of the data row we have four columns Petal Length,Petal Width,Sepal Length and Sepal Width. In the dataset we have about 3 different classes in which it could be classified as.

DataSet Summary:

Iris-Training data Summary

	Sepal Length	Sepal Width	Petal Length	Petal Width	Type
count	120	120	120	120	120
mean	5.845	3.065	3.739167	1.196667	1
std	0.868578	0.427156	1.8221	0.782039	0.840168
min	4.4	2	1	0.1	0
25%	5.075	2.8	1.5	0.3	0
50%	5.8	3	4.4	1.3	1
75%	6.425	3.3	5.1	1.8	2
max	7.9	4.4	6.9	2.5	2

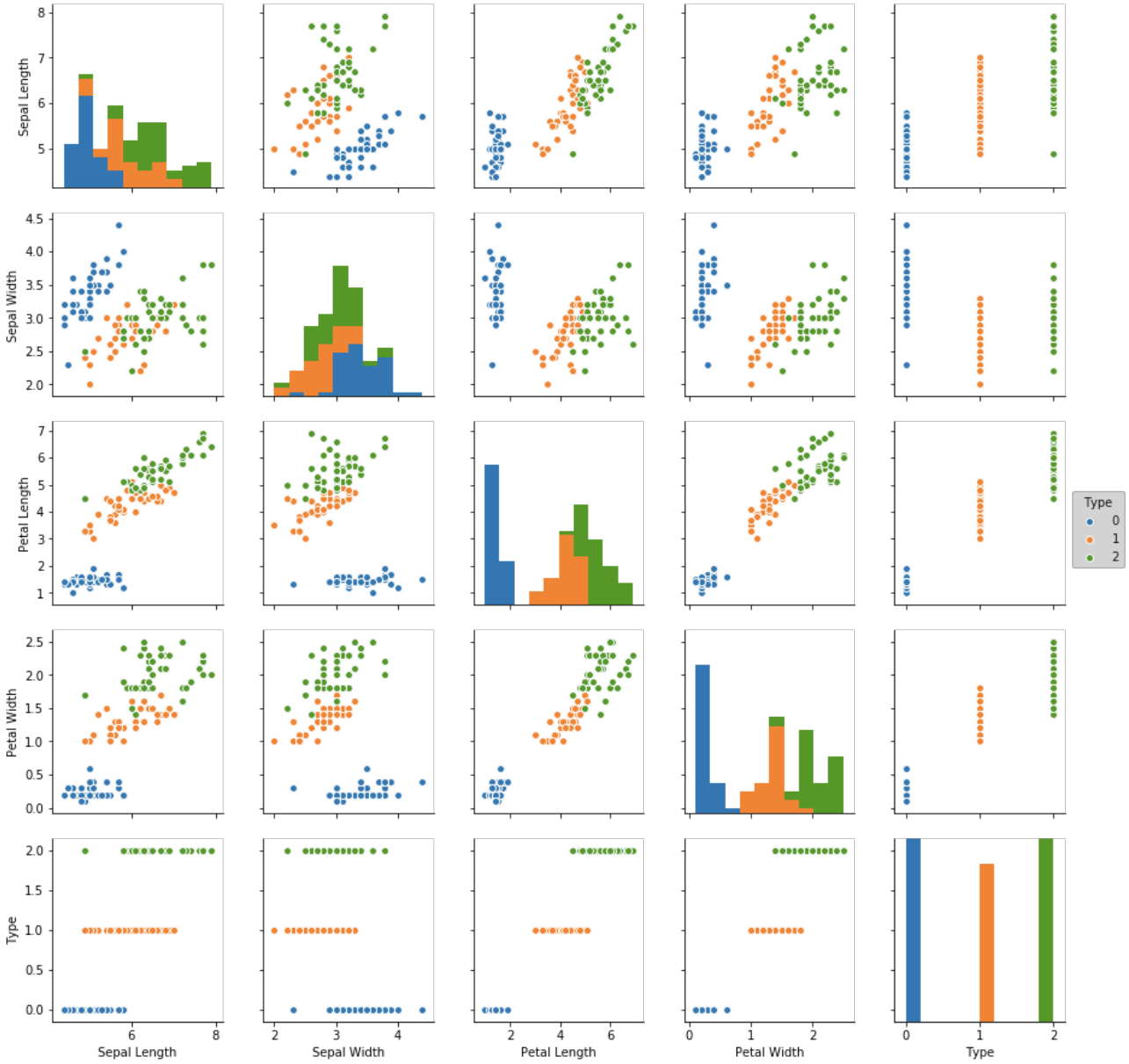
Correlation between columns

Table 1

	Sepal Length	**Sepal Width**	**Petal Length**	**Petal Width**	**Type**
Sepal Length	1	-0.076125	0.87583	0.822914	
Sepal Width	-0.076125	1	-0.387772	-0.324107	-0
Petal Length	0.87583	-0.387772	1	0.96247	0
Petal Width	0.822914	-0.324107	0.96247	1	0
Type	0.7865	-0.393378	0.950742	0.959223	

Graphical Representation of the Data:

We can clearly see below that there are three different classes which are distinctly separated using the column Petal length and petal width. Even the correlation matrix signifies it. Lets run the logistic regression with both the columns and see.



Logistic Regression With MultiNomial:

We have build the model using only two columns petal length and petal width.
The accuracy on the training data set is :

```
0.9583333333333334
```

And the accuracy on the test dataset is :

```
0.9666666666666667
```

```
Training:
array([[42,  0,  0],
       [ 0, 33,  3],
       [ 0,  2, 40]])
```

```
Test:
array([[ 8,  0,  0],
       [ 0, 14,  0],
       [ 0,  1,  7]])
```

Deep Learning Algorithm Using Tensor Flow:

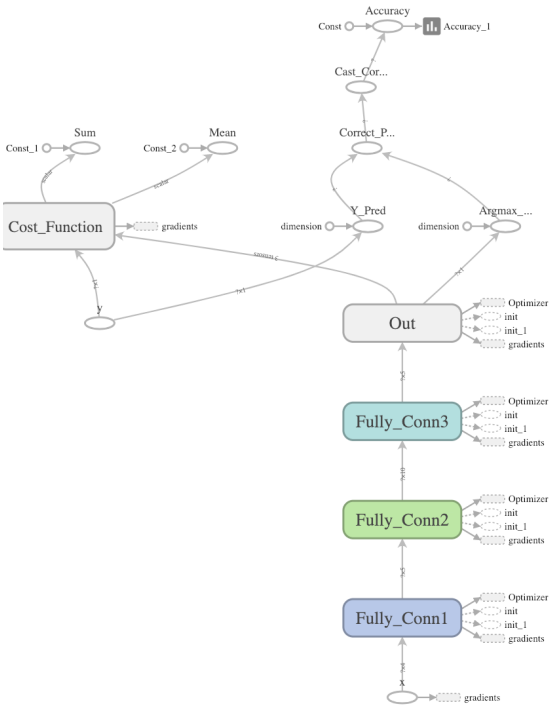
The Analysis is done on the iris dataset using deep learning technique with 3 layers of full connected graph.

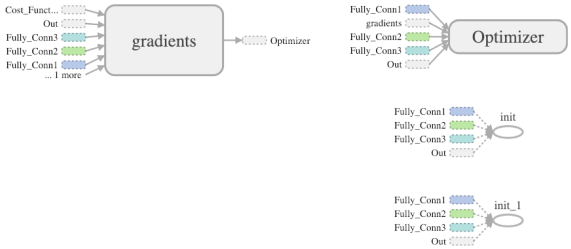
The number of nodes in Hidden layer1 is 5 ,hidden layer2 is 10 and hidden layer3 is 5.

Accuracy of both Trains and test dataset is 100%.

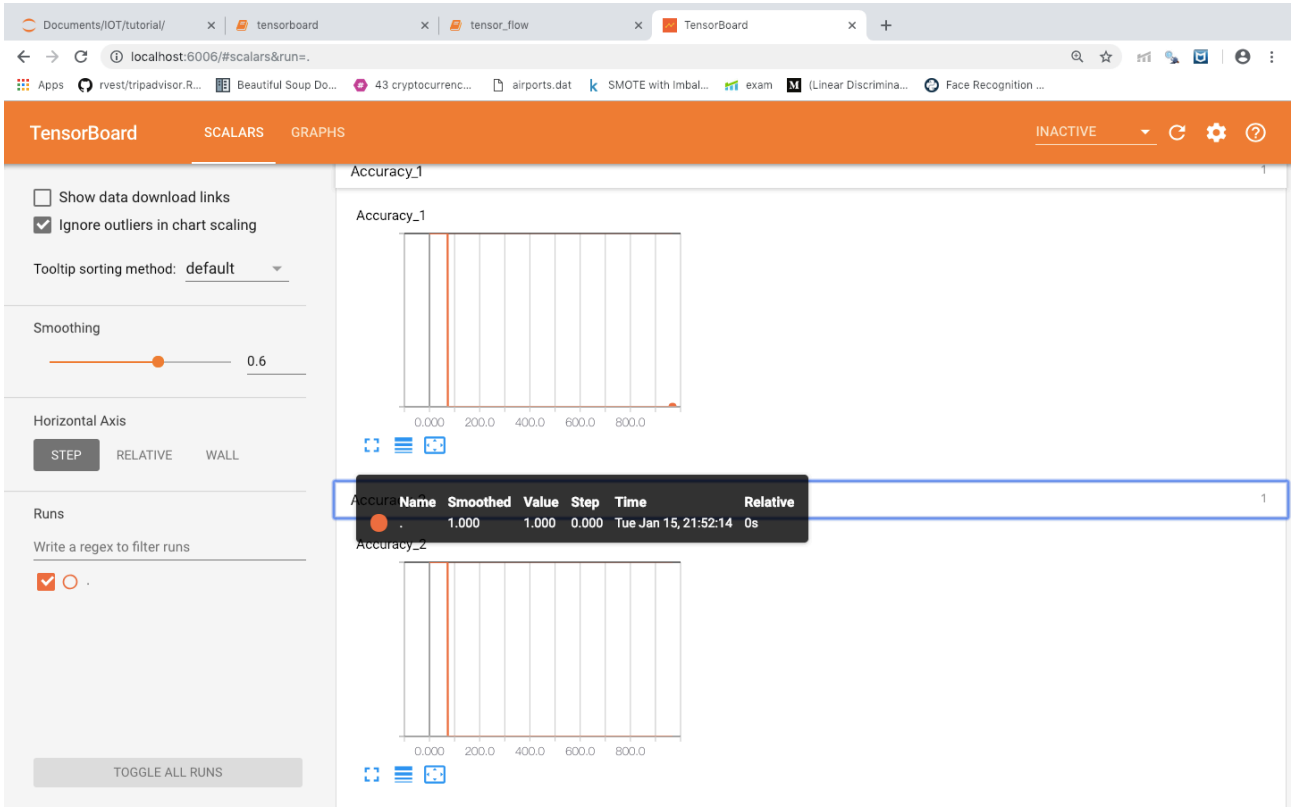
The cost of the accuracy is 0.

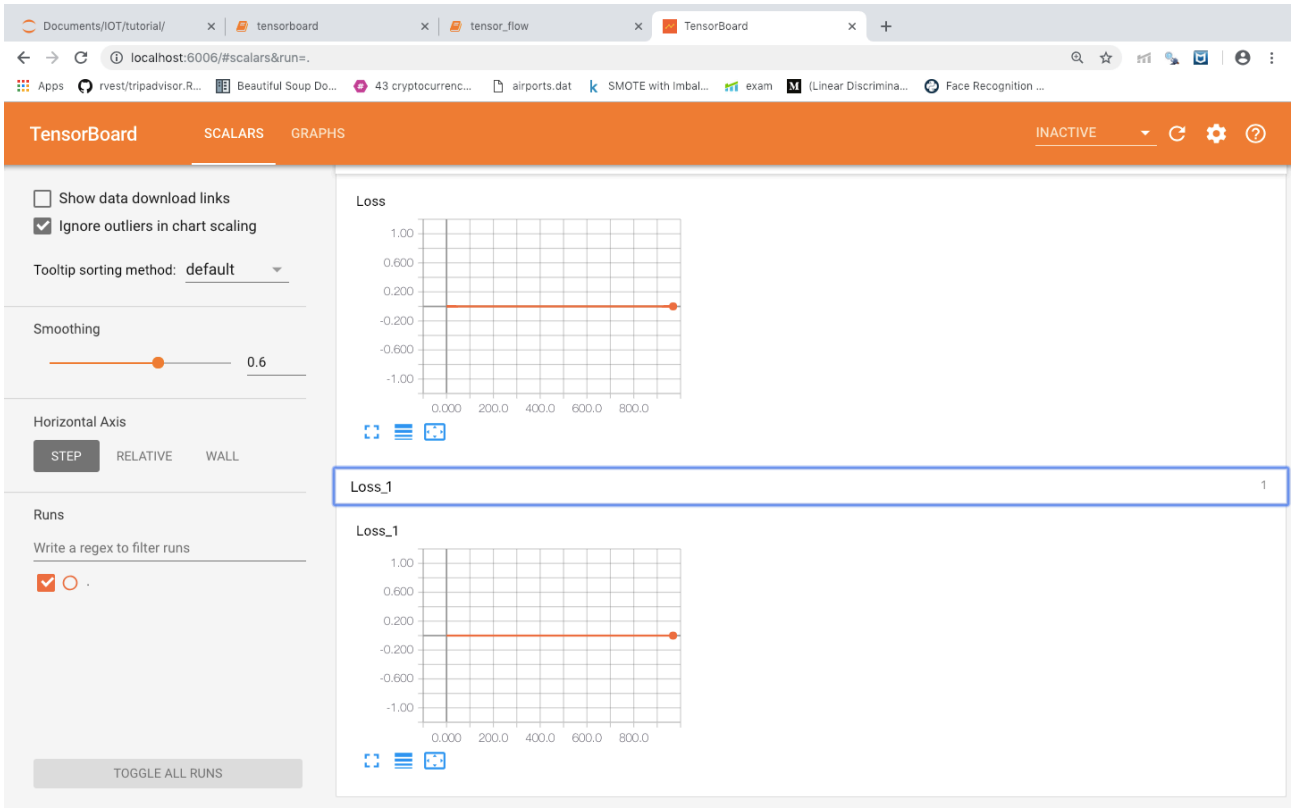
Graph for the tensor flow:





Losses and accuracy screenshot below.:


Documents/IOT/tutorial/
tensorboard
tensor_flow
TensorBoard
localhost:6006/#scalars&run=.
TensorBoard
SCALARS
GRAPHS
INACTIVE
Show data download links
Ignore outliers in chart scaling
Tooltip sorting method: default
Smoothing
0.6
Horizontal Axis
STEP
RELATIVE
WALL
Runs
Write a regex to filter runs
TOGGLE ALL RUNS
Accuracy_1
Accuracy_1
0.000
200.0
400.0
600.0
800.0
Name Smoothed Value Step Time Relative
1.000 1.000 0.000 Tue Jan 15, 21:52:14 0s
Accuracy_2


Documents/IOT/tutorial/
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Runs
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Loss
1.00
0.600
0.200
-0.200
-0.600
-1.00
0.000
200.0
400.0
600.0
800.0
Loss_1
Loss_1