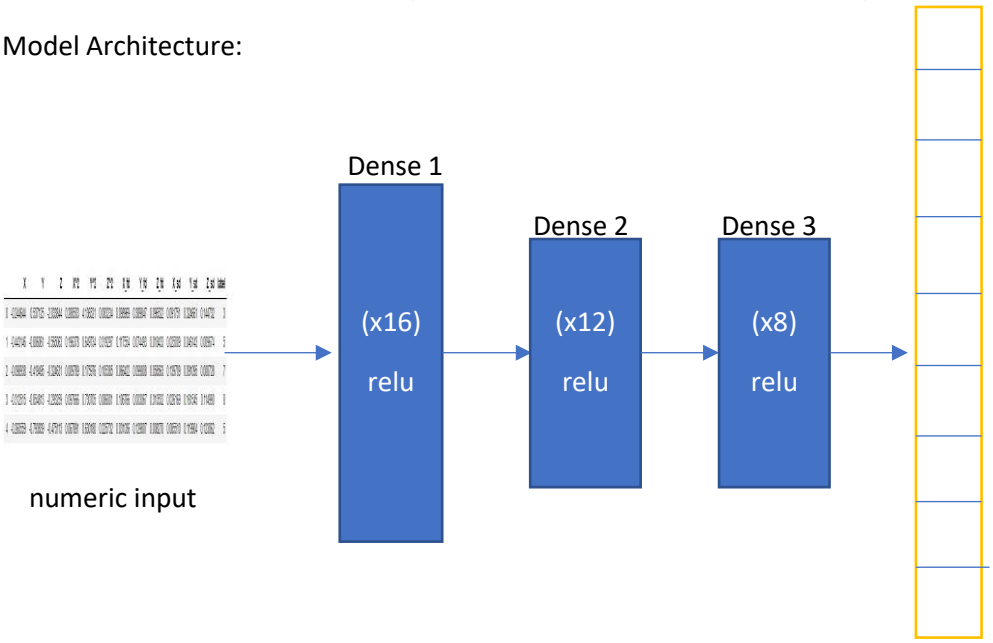
RESULTS AND OBSERVATIONS RECORDED:

(CUSTOM NEURAL NETWORK MODEL)

Model Architecture:



Results for Neural Network model:

Criteria:

Epochs= 100

Loss= categorical cross entropy

Batch size = 64

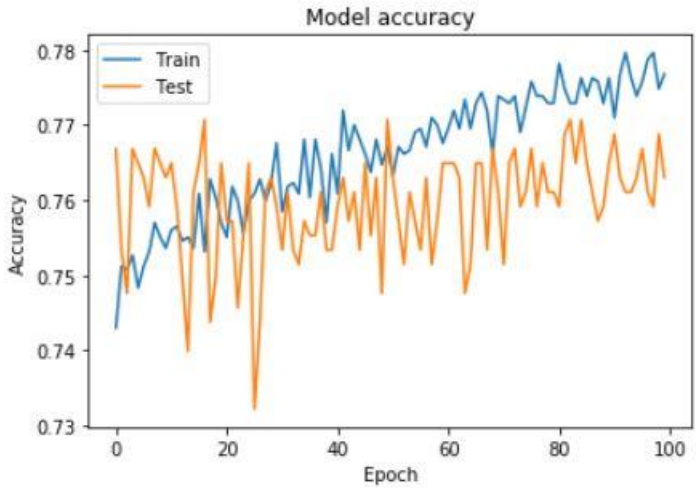
Optimizer= Adam

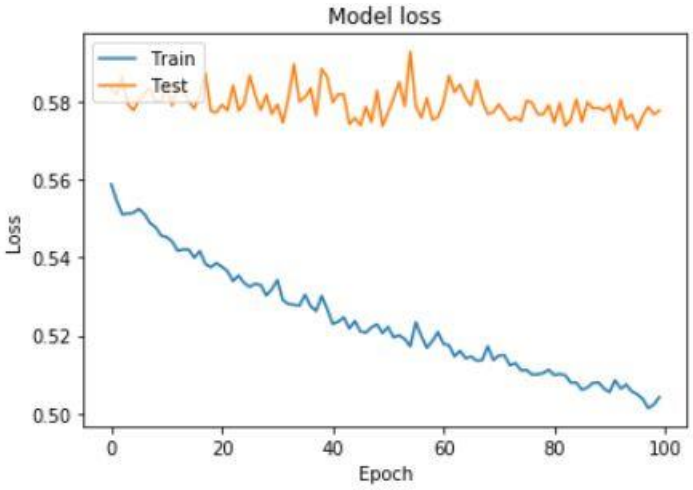
Training Specifications:

Epochs	Training Loss	Training Accuracy
100	0.5042	0.7768

Testing Specifications:

Epochs	Testing Loss	Testing Accuracy
100	0.5776	0.7630





As the results for the custom neural network have been the best, it shall be used for multi-label classification of the activities.

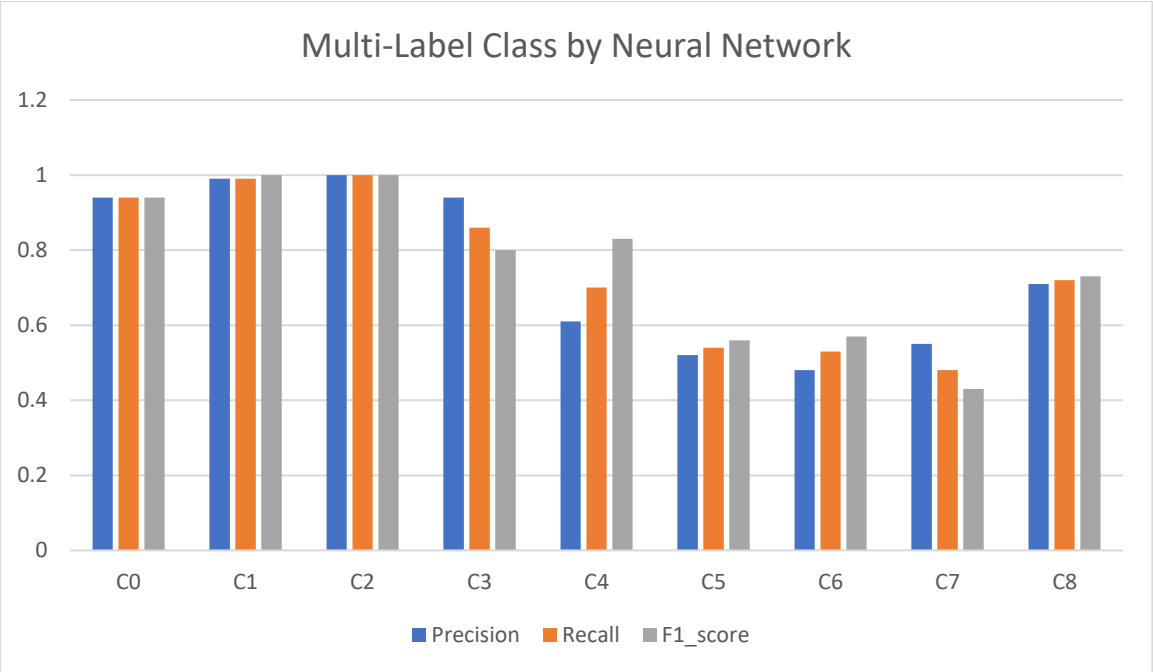
Conclusion:

The multi-label activities performed with the neural network are as follows:

	precision	recall	f1-score	support
class 0	0.94	0.94	0.94	67
class 1	1.00	0.99	0.99	74
class 2	1.00	1.00	1.00	55
class 3	0.80	0.94	0.86	54
class 4	0.83	0.61	0.70	31
class 5	0.56	0.52	0.54	63
class 6	0.57	0.48	0.53	64
class 7	0.43	0.55	0.48	53
class 8	0.73	0.71	0.72	58
accuracy			0.76	519
macro avg	0.76	0.75	0.75	519
weighted avg	0.77	0.76	0.76	519

Accuracy is: 76.10789980732177

Graphical Comparison:



Remarks:

*To check labels, see page 1 of pdf.

*There is deterioration in the classes C5, C6 and C7 due to similar activities i.e., walk upstairs, walk downstairs and walk uphill. However, walk line and walk downhill are recognised well.