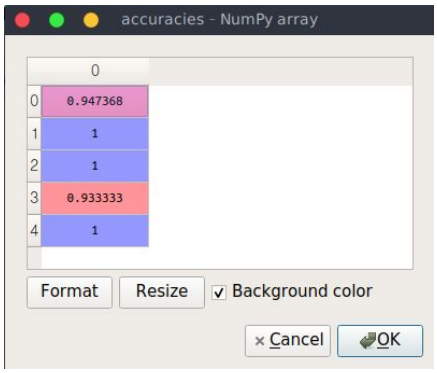
SECTION B

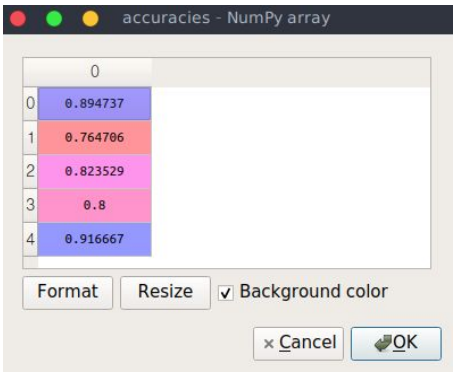
(A) The Multi-Class SVM model in a combination of following SVM kernels:

- **Linear Kernal**



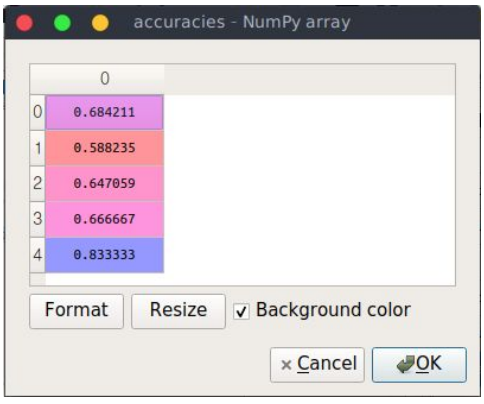
Classification Accuracy : 0.95
Average Precision : 0.777778

- **Polynomial Kernal**



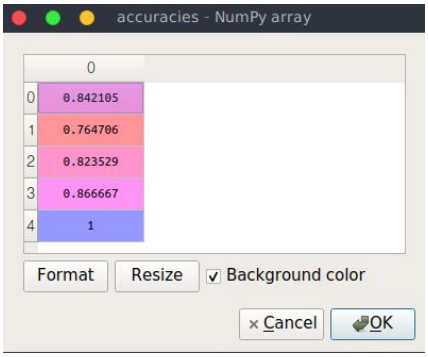
Classification Accuracy : 0.9
Average Precision : 0.75

- **Sigmoid Kernal**



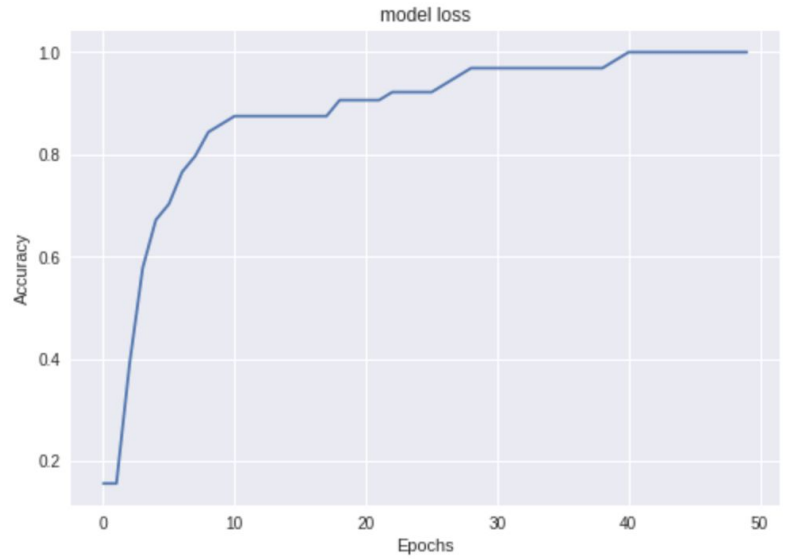
Classification Accuracy : 0.85
Average Precision : 0.4188

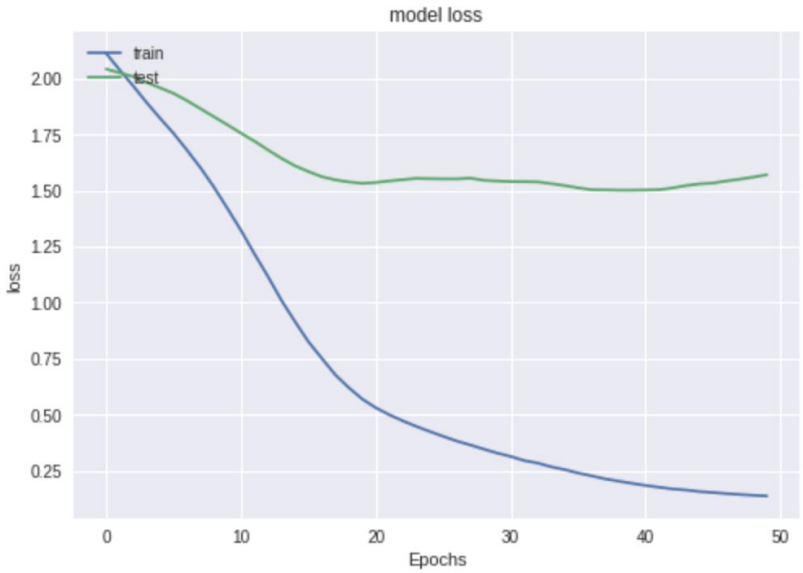
- **Radial Basis Kernal**



Classification Accuracy : 0.95
Average Precision : 0.777778

(B) Comparison of the results obtained using SVM and NN





Neural Network

Loss = binary_crossentropy
Optimizer = Adam
Metrics = accuracy, recall_m, precision_m
Learning Rate = 0.01
Epochs = 50

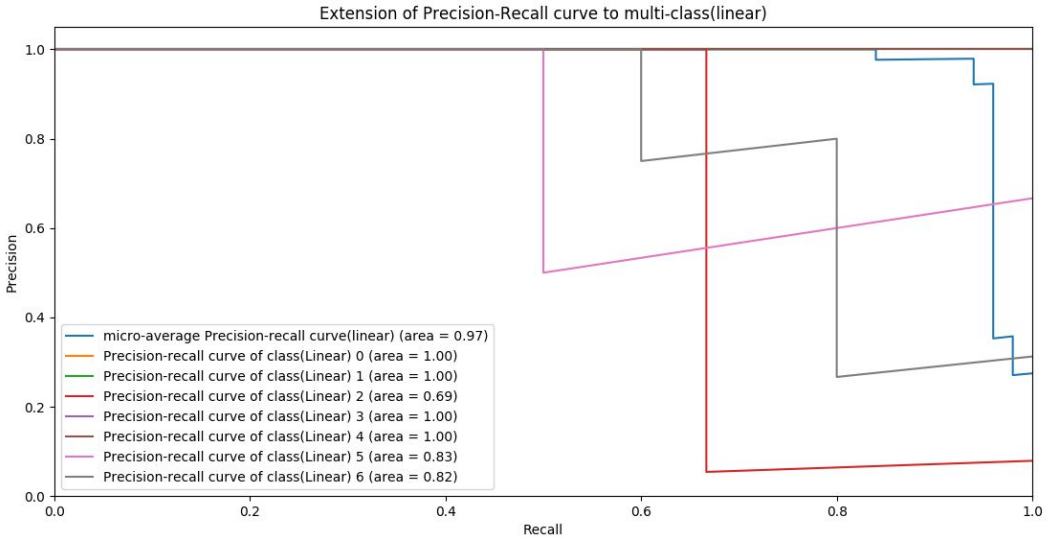
	Neural Network	SVM(Linear Kernal)	SVM(Polynomial Kernal)	SVM(Sigmoid Kernal)	SVM(Radial Basis Kernal)
Accuracy	1.0	0.95	0.9	0.85	0.95
Avg. Precision	0.8218	0.777778	0.75	0.4188	0.777778

From the results obtained using Multi-class SVM and Neural Network, it is easy to observe that the Accuracies and Average Precisions obtained using SVM is significantly greater than that obtained using Neural Nets.
The worst accuracy from SVM(0.85) is still better than the best accuracy of NN(0.8218).

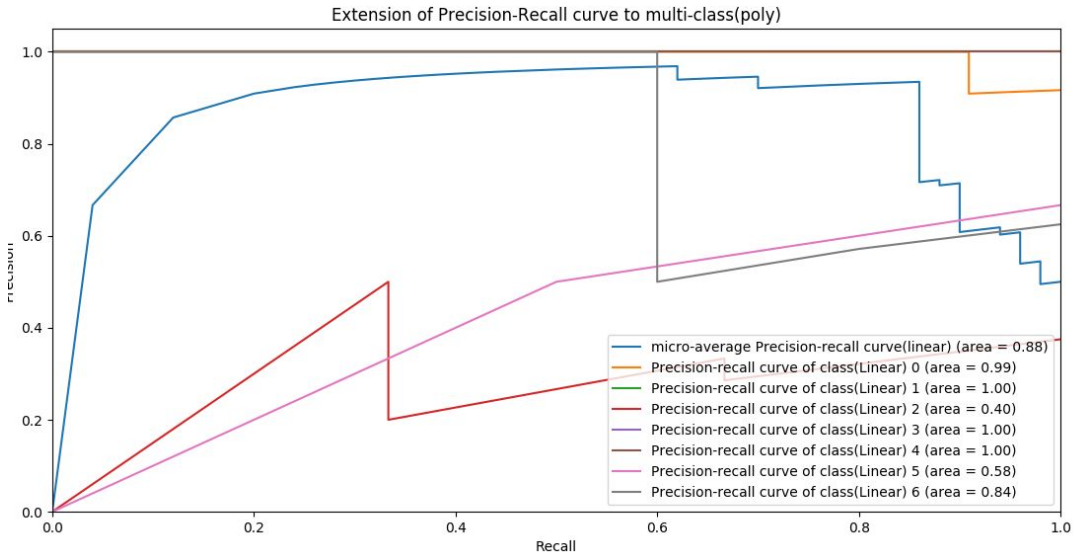
The plausible explanation of this could be that the Support vector Machines are more efficient and feasible than Neural nets when the available Dataset is small and inferences drawn are large. The Neural Network is expected to work significantly better than SVMs when the dataset is abundantly large.

(C) Performance(Precision-Recall Curve)

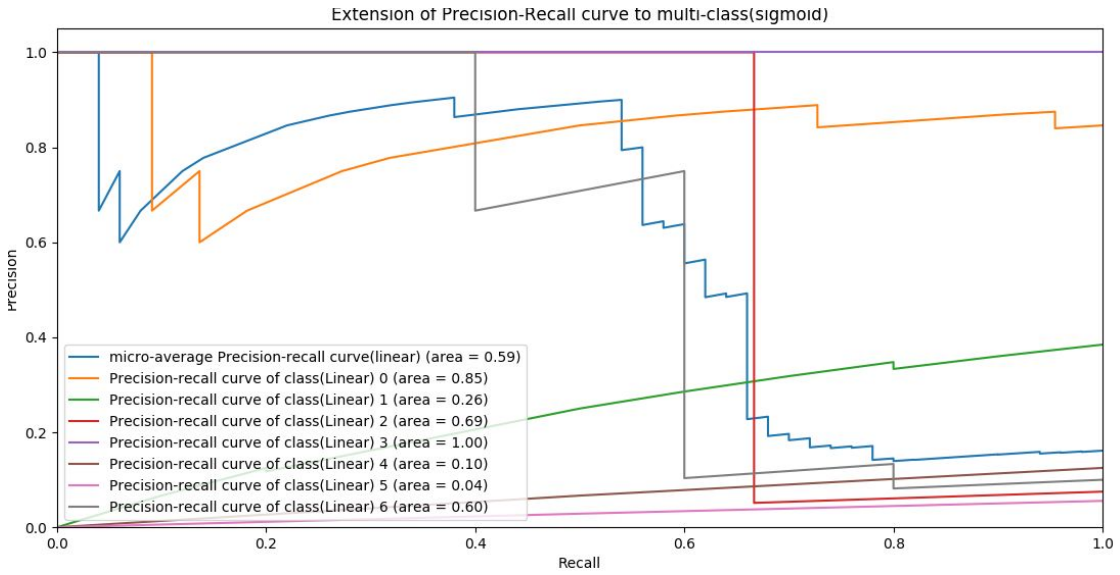
- For multi-class SVM
    - **Linear Kernal**



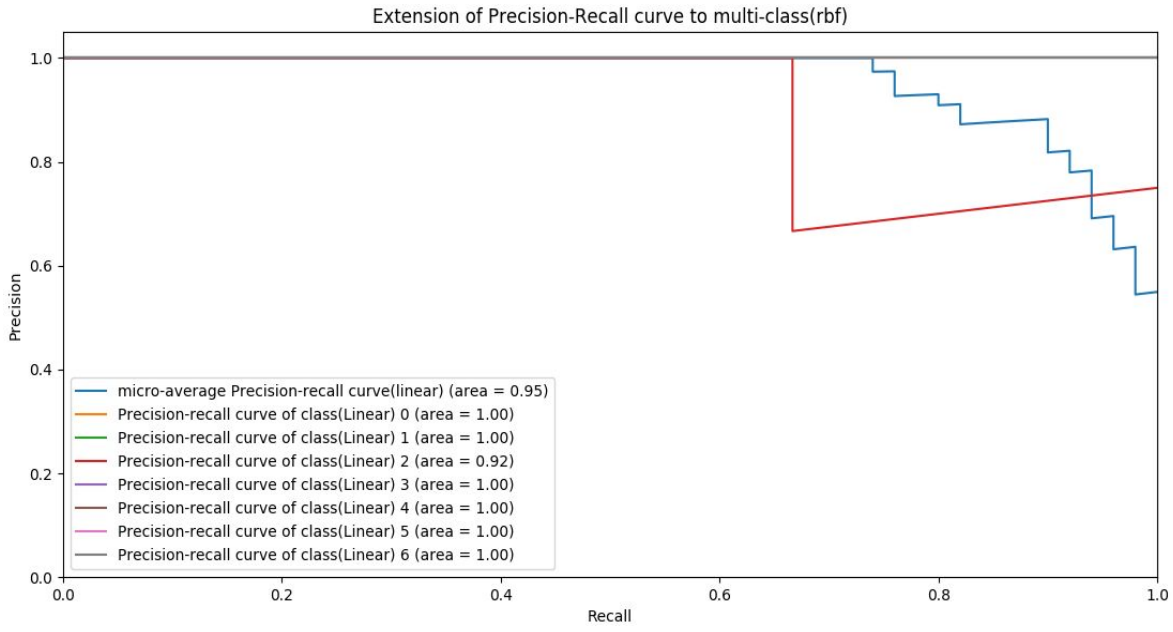
- **Polynomial Kernal**



- **Sigmoid Kernal**



- **<u>Radial Basis Kernal</u>**



- **For Neural Network**