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50.039
Deep Learning

Week 01: Discriminative ML - Quick Intro

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Performance measures on validation set:

Reg. Constant, C	Vanilla Accuracy		Class-wise Averaged Accuracy	
	Linear Kernel	RBF Kernel	Linear Kernel	RBF Kernel
0.01	0.83929	0.83333	**0.49589**	**0.54545**
0.1	0.83333	0.83333	0.49336	0.54545
$0.1^{0.5}$	0.83333	0.83333	0.49336	0.54545
1	0.82738	0.83333	0.49084	0.54545
$10^{0.5}$	0.83333	0.79762	0.49336	0.51061
10	0.82738	0.79762	0.49084	0.49091
100	0.83333	0.79762	0.49336	0.49091

For both kernels, the best regularisation constants found were 0.01.

The linear kernel generally performs better than the rbf kernel for vanilla accuracy, but generally performs worse on the class-wise accuracies, other than a few exceptions.

Performance measures on test set:

Vanilla Accuracy		Class-wise Averaged Accuracy	
Linear Kernel	RBF Kernel	Linear Kernel	RBF Kernel
0.80702	0.83772	0.44802	0.54485

The RBF kernel performs better than the linear kernel in terms of both vanilla accuracy and class-wise averaged accuracy.

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Vanilla accuracy is used to measure the accuracy of the model which combines the 3 binary SVMs. On the other hand, class-wise averaged accuracy first calculates the recall of the combined model for each class, before finding the mean of the values. Vanilla accuracy can then be used for general cases, but for cases where it is important to identify as many of the positive labels as possible (e.g. when diagnosing diseases), it might be better to use class-wise averaged accuracy.