CF : Assignment 2

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Testing accuracies for the three approaches are tabulated below:

	ELM	SRC	KSRC
Fold 1	0.3412	0.448	0.497
Fold 2	0.34055	0.478	0.522
Fold 3	0.3397	0.464	0.478
Fold 4	0.34335	0.492	0.508
Fold 5	0.3419125	0.491	0.499
Average	0.3413425	0.4764	0.5008

Order of performance (on the basis of accuracy) is : *ELM < SRC < KSRC*

- For ELM, since calculating the pseudo inverse of a large matrix is computationally expensive, a neural network with random fixed weights for input to hidden and trainable weights for hidden to output layer was used (which is equivalent, once the algorithm converges). The hidden layer is of 10 neurons (this value was found after brief search over this parameter)
- For SRC, coefficients are found using an *l1* constraint on the data (as specified in the paper mentioned in the assignment). Once the algorithm converges, rating of the training point with the largest coefficient is used.
- For KSRC, an rbf based PCA kernel is learnt, reducing the data into 10 dimensions. Then, SRC is applied.

ELM does not perform well, and this is expected, as the weights for one of the directions are randomly initialized and this highly limits the performance of the overall model. SRC and KSRC perform really well, as they are like memory-based prediction in a way (weighted memory). KSRC performs better than SRC, as it, in an way, considers only meaningful features while picking coefficients.