4. Possible ways to improve the performance of discussed neural networks

From working on my seminar and from discussions with my mentor I see the following ways to improve the performance of neural networks investigated:

1. Input data pre-processing

1) Partitioning of the input data for the cross-validation procedure has effect on the neural network performance. Indeed, even when the same values of division ratios are kept (0.7/0.15/0.15) and the whole data set is partitioned randomly again, the values of the correct classification function change:

Table 2

Sets of inputs	Neural networks		
	Multilayer perceptron	Radial basis function network	Probabilistic neural network
training + validation	100%	99.483%	100%
test	96.825%	96.825%	95.238%

This probably happens because the number of inputs is very small and the performance of the network is very sensitive to the way the original set is partitioned. The partitioning of original set can also be optimized. The possible way is to divide the original data set into a number of small sets and to search through them for the one that ensures the best generalization being used as validation set.