Figure 1 shows the classification error of the training set and of the validation set as a function of epoch for the four networks. C_Train1 & C_Valid1, C_Train2 & C_Valid2, C_Train3 & C_Valid3 and C_Train4 & C_Valid4 denote the classification errors of the training set and the validation set for the four networks, respectively.
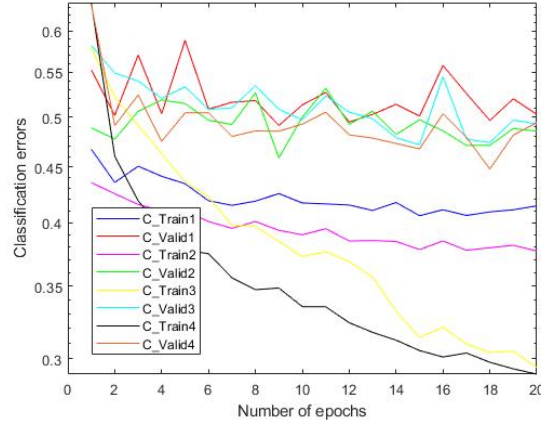

Figure 1: This figure shows the classification errors of the training set and the validation set for the four networks for 20 epochs.

Table 1: The table presents the lowest classification errors on the validation set (C_Valid) and the classification errors on the training set (C_Train) and the test set (C_Test) obtained for Networks 1-4 at the epoch (Epoch_No) where the lowest classification error on the validation set was obtained.

Network	C_Train	C_Valid	C_Test	No_Epochs
Network 1	0.4254	0.4912	0.4910	9
Network 2	0.3936	0.4588	0.4577	9
Network 3	0.3139	0.4715	0.4711	15
Network 4	0.2978	0.4481	0.4520	18

1   Results and Discussion

The results and discussion are the following:

1. From table 1, we find that the classification errors on the training sets are low and the classification errors on the validation set and the test set are higher for all networks.

2. The classification errors on all datasets for network 2 and network 3 are lower than that for network 1. The reason behind this is the inclusion of one hidden layer.

3. The classification errors on all datasets for network 4 are the least because of the inclusion of two hidden layers.