TDDE01 INTRODUCTION MACHINE LEARNING

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SUPPORT VECTOR MACHINES

See the attached file for the code. The data is split into three folds: Training, validation, and testing. The validation data is used to select the best model ($C = 0.05$ in this case), whose generalization error is estimated with the help of the test data (note that we use all the data for learning except the test data). The model returned to the user is the result of using all the data for learning and $C = 0.05$. The estimated error of the model returned to the user is precisely the error we computed on the test data.

NEURAL NETWORKS

See the attached file for the code. The best model is that with one layer of 10 neurons and threshold for early stopping equal to 4/1000. The generalization error is estimated by sampling additional test data, since we have access to the true function. Therefore, we conclude that more layers is not always better.