Aprenentatge Automàtic 21-22 (part II)

Name: Surname:

1. Explain what a kernel is and how it is used (Either **briefly** explain the kernel trick or the use of kernels in the primal).

2. Soft-margin SVM is the formulation used for non-separable data. When paired with and RBF kernel, this formulation is governed by means of two parameters, C (in the objective function) and gamma (for the kernel). Describe the role of these two terms and their influence in the obtained solution.

3. Ensemble learning is based on the aggregation of decisions of different classifiers. For ensemble learning to work classifiers must be diverse. What does diversity mean in this context? Name three different ways of achieving diversity (give a one-two lines description of each of them).

4. Briefly explain two different clustering strategies and provide a use case/example where that strategy fits in.

5. Consider that we have a dataset. Describe a technique for generating samples "compatible" with the data in the dataset.