## **Project 7**

(M1) is a Neural Network for multi-class classification with topology of your choice, but mandatory piecewise-linear activation function (of your choice); any regularization is allowed.

(A1) is a standard [momentum descent (heavy ball) approach](http://www.cs.toronto.edu/~fritz/absps/momentum.pdf).

(A2) is an algorithm of the class of [bundle methods](http://pages.di.unipi.it/frangio/abstracts.html#NDOB18).

The computation of the gradient has to be done via an ad-hoc implementation, typically using the standard backpropagation scheme (rather than, e.g., relying on existing Automatic Differentiation tools). Use of an off-the-shelf solver for the Master Problem of the bundle method is allowed.

* A list (A1), (A2), … of optimization algorithms suitable for solving the problems (P1), (P2), … (fitting problems corresponding to (M1), (M2), …) that have been seen in the course, or are at least based on the same conceptual tools. Some details of the algorithms are clearly specified and must be closely adhered to, other details are explicitly left free to choose (possibly with restrictions).