REMOTE SENSING (NN) EXERCISE:

The objective of this exercise is to experiment with different parameter settings when using a neural network to classify remotely sensed data. A feed forward multi layer perceptron (MLP) is used to classify a LANDSAT ETM+ image into 5 CORINE level 1 land cover classes. Only spectral LANDSAT information is used and specifically channels 1, 2, 3 and 4.

A. By trial and error, identify good values, present and briefly comment on the sensitivity of the following parameters:

   a. Learning rate
   b. Momentum
   c. Number of nodes in the hidden layer

   You can change those values in c:\PODEPRO_student\NN\exersice\PODEPRO__NN.m

```
function [y, bestNet]=PODEPRO__NN()

% for PODEPRO students
LearingRate = 0.03;
Momentum = 0.9;
numberOfHiddenNodes = 20;
% end of PODEPRO students section

…
```

B. When you are confident enough that you have found a good set of parameters report them by constructing a table where 10 successive runs with these settings are presented. Calculate and present the mean, min, max and standard deviation of these results. Report overall accuracy only which is save in the file C:\PODEPRO_student\NN\exersice\gann_best_solution.log in the form of an accuracy matrix. Note that as this is a difficult classification problem accuracy is expected to range within 60%-80%.

C. Briefly discuss why is it important to average results over successive runs when presenting the outcome of any neural network? Why is a single run not enough and which exactly is the cause of this symptom?

The overall final deliverable is one A4 page. Please make sure you include your details (name, email etc) somewhere within that page. Marks: Content = 9, general layout = 1. Please email it to dimitris@stathakis@jrc.it before the deadline.

Deadline _____/ 2007