Assignment: A2

Due: 20 September 2012

You are to explore the use of Radial Basis Functions (RBFs), also called a radial basis networks, to classify scanned images of the 26 lower-case characters (i.e., a-z), and compare the method to MLP. Several aspects of the RBFs deserve careful attention:

- **Input vector**: try at least 2 possibilities from these 3 alternatives:
  - Pixel values (binary): image pixels or subsets of image pixels
  - Low-level features: e.g., moments, projections
  - High-level features: e.g., curvature of the boundary
- **Basis vector selection**:
  - Use all training samples
  - Find smaller set representative of samples
- **Algorithm parameters**: try at least 2 alternatives for each of these:
  - Distance function
  - σ values
- **Data Management**:
  - How to select training and testing
  - How to compare learning methods

In addition, the results need to be presented in a strong statistical framework; this means computing statistics (e.g., mean, variance) over several trials (how many?), and showing confidence intervals.

Finally, the analysis and interpretation are the essential parts of the report; use these to present your findings, understanding and remaining problems.

In this assignment, the two major goals are to explore the use of RBFs and to compare two learning methods (MLP and RBF).

There is a set of sample images on the class data sub-directory.