**Data mining**

**Lab 4**

**Kernel Computation**

Compute the centered and normalized homogeneous quadratic kernel matrix **K** for the [**iris.txt**](http://www.dataminingbook.info/pmwiki.php/Main/KernelMethods?action=download&upname=iris.txt) dataset using the kernel function in input space. Ignore the last column of the data, which is a categorical attribute for the type of Iris flower.

Next, explicitly transform each point **xi**to the feature space **ϕ(xi),** using the homogeneous quadratic kernel. Center these points and normalize them. Finally verify that the pair-wise dot products of the centered and normalized points in feature space yield the same kernel matrix computed directly in input space via the kernel function. To do this, compute the matrix difference between the kernel matrices from the two approaches, and then print the sum of the differences.