Knowledge Lab

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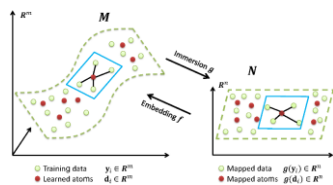UNIVERSITY OF LONDON

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Face Recognition: Comparing two Facial Images with Different Resolutions

Research Aims

Facial recognition is an important field of research; its real-world applications are:

- Biometric keys, for securing access to buildings, systems, etc.
- Automating security monitoring of CCTV.
- De-duplication, preventing fraudulent identity application or voting.

However, facial recognition is a difficult task in computer vision.

I will be investigating the facial recognition issue of matching a high resolution facial image with another facial image at a lower resolution.

Research Methodology

Until recently many face recognition algorithms used Principle Component Analysis (PCA) or Linear Discriminant Analysis (LDA) techniques, which involve the projection of a feature space onto a linear subspace. These projections result in the loss of some of the information contained within the feature space.

Recent research has identified the potential of exploring Riemannian manifold, and using its properties to solve object recognition for an unlabelled problem.

I will investigate non-linear kernel methods on a feature space on a Riemannian manifold. Using retention of information from the feature space when projecting onto a lower dimensional subspace.

Research Approach

I will be developing an algorithm using MatLAB. It will be tested against standard set of face databases of IJB-A and LFW.
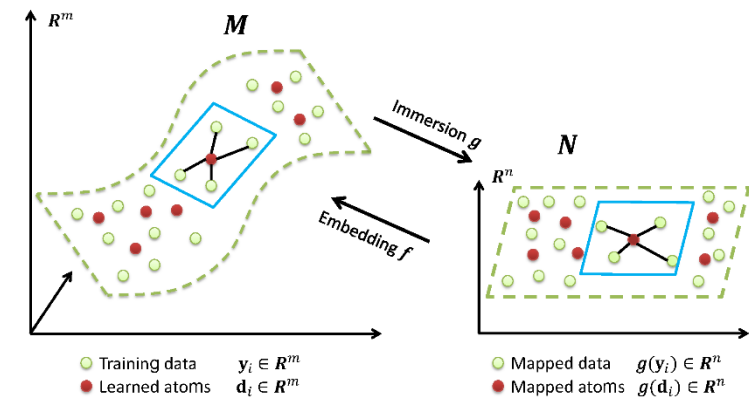

Figure 1 : Visual diagram of visual reduction on Riemannian manifold

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