**ML – 3DMM (3D morphable models)**

3DMM are powerful statistical models of 3D facial shape and texture, we will talk about the PCA method of 3DMM

3DMM are based on two concepts:

* All faces are in **dense point-to-point** correspondence, this is to define linear combination of faces in a meaningful way
* Separation of facial shape and color to **work independently from illumination and camera parameters**

This evolved from the **eigenfaces** approach, Eigenfaces treated images of faces as a vector space and performed a principal component analysis, with the eigenvectors representing the main modes of variation in that space

**Remark:** All of machine learning is about extrapolating patterns