A KERNEL-BASED ANALYSIS OF LAPLACIAN EIGENMAPS

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Laplacian eigenmaps and diffusion maps are nonlinear dimensionality reduction methods that use the eigenvalues and eigenvectors of normalized graph Laplacians. From a mathematical perspective, the main problem is to understand these empirical Laplacians as spectral approximations of the underlying Laplace-Beltrami operator. In this talk, we study Laplacian eigenmaps through the lens of kernel PCA. This leads to novel points of view and allows to leverage results for empirical covariance operators in infinite dimensions.