
SEMINARIO

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New approaches to high-dimensional problems via optimal transport

Abstract: Optimal transport theory has proven to be a fundamental tool for handling various types of data, and its use is becoming increasingly common in many fields, especially within the machine learning community. However, it is well known that optimal transport faces both theoretical and computational challenges in high-dimensional problems. Despite several approaches have emerged to address these issues, it remains a very active line of research. In this talk, we will introduce the theory of optimal transport and highlight the main challenges it faces in high-dimensional settings. We will review some key proposals in the area, focusing on projection pursuit methods. Finally, two open research initiatives will be presented: a distributional PCA for Gaussian data, which enables dimensionality reduction in distributional classification problems, and a component-wise Wasserstein distance, which replaces the original definition with a monotone-by-components alternative.

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