

COLOQUIO JUNIOR

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Aula 520, Módulo 17, Facultad de Ciencias, UAM

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Foundations of support vector machines. The role of kernels.

Support vector machines (commonly known as SVMs) are one of the most widely used supervised statistical learning algorithms for data analysis, particularly in classification problems. In this talk, we will explain the mathematical foundations of SVMs, analyzing the optimization problem of hard margin and soft margin classifiers. One of the key parts of SVMs is the use of kernels, which allow working with nonlinear data through a mapping to higher dimensions where the data is separable. We will study the theory of kernels from an analytical point of view and provide a perspective of these functions as similarity measures, which facilitates and allows a new interpretation of the role of kernels within SVMs. We will also review and analyze the most relevant examples, with special attention to kernels of orthogonal polynomials.



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