

## **Navegação no Hiperplano e Aplicações em Neuroimagem**

João Ricardo Sato (Instituto de Radiologia, Hospital de Clinicas, USP)

Recent studies have demonstrated that spatial patterns of fMRI BOLD activity distribution over the brain may be used to classify different groups or mental states. These studies are based on the application of advanced pattern recognition approaches and multivariate statistical classifiers. Most published articles in this field are focused on improving the accuracy rates and many approaches have been proposed to accomplish this task. Nevertheless, a point inherent to most machine learning methods (and still relatively unexplored in neuroimaging) is how the discriminative information can be used to characterize groups and their differences. In this work, we introduce the Maximum Uncertainty Linear Discrimination Analysis (MLDA) and show how it can be applied to infer groups' patterns by discriminant hyperplane navigation. In addition, we show that it naturally defines a behavioral score, i.e., an index quantifying the distance between the states of a subject from predefined groups. We validate and illustrate this approach using a motor block design fMRI experiment data with 35 subjects.