

# OVERVIEW OF BAYESIAN INFERENCE, MAXIMUM ENTROPY AND SVM METHODS

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## Abstract

Feature selection analyses from the perspective of classification performance conducts to the discussion of the relationships between SVM, Bayesian and Maximum Entropy formalisms. Maximum Entropy discrimination can be seen as a particular case of Bayesian inference, which at its turn can be seen as a regularization approach applicable to SVM. Probability measures can be attached to each feature vector thus, feature selection can be described by a discriminative model over the feature space. Further the probabilistic SVM allows to define a posterior probability model for a classifier. Further, the similarities with the kernels based on Kullback-Leibler divergence can be deduced, thus returning to a MaxEnt similarity.

Key Words: Bayesian Inference, Support Vector Machine, Maximum Entropy