A Trend on Regularization and Model Selection in Statistical Learning: A Perspective from Bayesian Ying Yang Learning

Professor Lei Xu
Department of Computer Engineering
Chinese University of Hong Kong
lxu@cse.cuhk.edu.hk

Abstract: Advances on regularization and model selection in statistical learning have been summarized, and a trend has been discussed from a Bayesian Ying Yang learning perspective. After briefly introducing Bayesian Ying-Yang system and best harmony learning, not only its advantages of automatic model selection and of integrating regularization and model selection have been addressed, but also its differences and relations to existing typical learning methods have been discussed and elaborated. Taking the tasks of Gaussian mixture, local subspaces, local factor analysis as examples, not only detailed model selection criteria are given, but also a general learning procedure is provided, which unifies adaptive learning algorithms for these tasks with automatic model selection ability.