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*Models of statistical learning and their learnability characterizing dimensions*

I will define a model for general statistical learning that captures as specific cases most of the common machine learning tasks, and discuss some natural special cases of that model. The talk will focus on the existence of notions of dimensions that characterize PAC-style learnability in these models. I will propose a couple of possible definitions of such notions of dimensions. For some, such as binary classification, there are well known learnability characterizing dimensions (e.g., the VC-dimension). However, for the most general model we have shown that assuming ZFC is consistent, no such dimension exists. For some other interesting variants, the existence of learnability-characterization dimension is an open question.