The Generalization Ability of SVM Classification Based on Markov Sampling

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The previously known works studying the generalization ability of Support Vector Machine (SVM) classification algorithm are usually based on the assumption of independent and identically distributed (i.i.d.) samples. In this paper we go far beyond this classical framework by studying the generalization performance of SVM classification based on uniformly ergodic Markov chain (u.e.M.c.) samples. We estimate the excess misclassification error of SVM classification based on u.e.M.c. samples and obtain satisfactory learning rates. We also introduce a new Markov sampling algorithm for classification to generate u.e.M.c. samples from given data, and present the numerical studies on the learning ability of SVM classification based on Markov sampling for benchmark repository.