

Support Vector Machines Reading List

Well, I implemented SVM with the method in [1], which is a combination of SMO and SVM-Light. The algorithm is more efficient than SVM-Light, however it's not the state of the art svm solver. [2] is more efficient, but it's more complicated and harder to understand. If you are not a researcher in machine learning (especially in Support Vector Machines) and you just want to know some details in how svm exactly works, I think the algorithm in [1] is enough. Before you read [1], you need to know the general principles of SVM, SMO and SVM-light. [3] gives a very detailed tutorial of svm, and the math skills needed for svm will also be introduced. [4] presents the SMO algorithm and a pseudo code is provided which is very helpful. Besides, in the appendix there is a very detailed derivation. SVM-light is proposed in [5]. If you know nothing about SVM, the recommended reading sequence is as follows: [3] (you can also see his video lecture), [4], [5], [1].

Reference

- [1] Chih-Chung Chang and Chih-Jen Lin. LIBSVM: Introduction and Benchmarks
- [2] R.-E. Fan, P.-H. Chen, and C.-J. Lin. Working set selection using second order information for training SVM. *Journal of Machine Learning Research* 6, 1889-1918, 2005.
- [3] Andrew Ng, SVM lecture notes, <http://cs229.stanford.edu/notes/cs229-notes3.pdf>
- [4] Platt. Sequential minimal optimization: A fast algorithm for training support vector machines. Technical Report MSR-TR-98-14, Microsoft Research, 1998a.
- [5] T. Joachims, Making Large-Scale SVM Learning Practical. In *Advances in Kernel Methods - Support Vector Learning*, B. Schölkopf, C. Burges, and A. Smola (ed.), MIT Press, 1999.