



Margins, Shrinkage, and Boosting

[Matus Telgarsky](#)

(Submitted on 18 Mar 2013)

This manuscript shows that AdaBoost and its immediate variants can produce approximate maximum margin classifiers simply by scaling step size choices with a fixed small constant. In this way, when the unscaled step size is an optimal choice, these results provide guarantees for Friedman's empirically successful "shrinkage" procedure for gradient boosting (Friedman, 2000). Guarantees are also provided for a variety of other step sizes, affirming the intuition that increasingly regularized line searches provide improved margin guarantees. The results hold for the exponential loss and similar losses, most notably the logistic loss.

Comments: To appear, ICML 2013

Subjects: **Learning (cs.LG)**; Machine Learning (stat.ML)

Cite as: [arXiv:1303.4172 \[cs.LG\]](#)
(or [arXiv:1303.4172v1 \[cs.LG\]](#) for this version)

Submission history

From: Matus Telgarsky [[view email](#)]

[v1] Mon, 18 Mar 2013 07:33:29 GMT (383kb,D)

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