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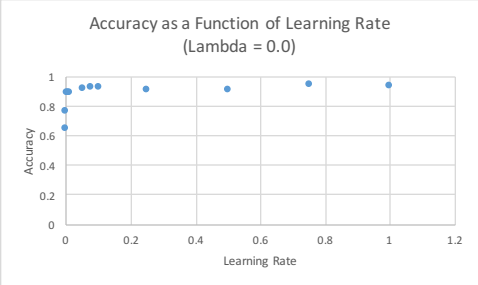
CSCI 5622
logreg HW

1. Final accuracy of the SGA implementaion increased rapidly from very small eta values, until a levelling-off at approximately eta=0.001. This accuracy held in the range of eta = [0.001,1], but once eta grew past 1, accuracy decreased. Low accuracy of very small eta values may reflect a learning step that was too small to climb the gradient to a maximum value in the number of runs completed, and decreased accuracy of large eta values may be due to continuous overshoot of the max.



2. Assuming that the gradient we are ascending is given by a convex function, a relatively large learning rate can be used in the early iterations, and steadily decreased as iterations continue, until the change in $P(y = 1|x_i, D)$ from one iteration to the next is smaller than a predetermined limit.

3,4. To determine best (and worst) predictors, I calculated the change in odds of a sample being classified as y=1, based on adding one more instance of a given word. The five highest and lowest predictors, and corresponding weights and odds changes, were:

Word	weight (w)	resulting odds change (exp(w))
hit	1.61504677899	5.02812312851
pitching	1.40274087306	4.06633000124
baseball	1.30444455192	3.68564134265
runs	1.27369921464	3.57404931405
better	1.08832236219	2.96928850109
pts	-6.28964736324	0.00185541411873
period	-2.29188370521	0.101075885243
hockey	-2.24173937575	0.106273493986
vs	-2.12459227351	0.119481674181
shots	-1.99187415812	0.136439476524

The following predictors had no effect on final classification (w=0, exp(w) = 1):
aggravatingly, alway, baby, contained, crumbled, favour, pronunciation, prototypical, ratio, sportscasters.