

HW08: Machine Learning

Hand in at: <http://www.cs.utah.edu/~hal/handin.pl?course=cmsc723>. Remember that only PDF submissions are accepted. We encourage using L^AT_EX to produce your writeups. See `hw00.tex` for an example of how to do so. You can make a `.pdf` out of the `.tex` by running “`pdflatex hw00.tex`”.

1 Basic ML Concepts

Please answer the following questions in 2-5 sentences.

1. What is inductive bias?
2. Describe overfitting and underfitting both in general terms and then particularly with respect to decision trees.
3. The standard perceptron update is $\mathbf{w} \leftarrow \mathbf{w} + y_n \mathbf{x}_n$ when a mistake is made. Suppose we were to add a learning rate $\eta > 0$ so that the update became $\mathbf{w} \leftarrow \mathbf{w} + \eta y_n \mathbf{x}_n$. Does this change the final learned classifier? If so, how? If not, why not?