

HOML CH. 4

11. Suppose you want to classify pictures as outdoor/indoor and daytime/nighttime. Should you implement two Logistic Regression classifiers or one Softmax Regression classifier?

Since these are not mutually exclusive classes, two Logistic Regression models would be the better approach. We can have four combinations of pictures - outdoor/daytime, indoor/daytime, outdoor/nighttime, and indoor/nighttime. Thus, a Softmax approach, which works with mutually exclusive classes, would not perform well. Instead, we can run two logistic regression classifiers, one distinguishing between outdoor/indoor and another distinguishing between daytime/nighttime. In contrast, Softmax would perform better when applied to the Iris and MNIST datasets because the classes within each dataset are mutually exclusive (i.e. flowers can't be more than one species and a digit can't be two different numbers).